

**SOUTHWEST LIGHT RAIL TRANSIT
(METRO GREEN LINE EXTENSION)****FINAL ENVIRONMENTAL IMPACT STATEMENT**

Prepared by:
United States Department of Transportation (USDOT)
Federal Transit Administration (FTA)

and

Metropolitan Council, Minnesota (Council)

In cooperation with
United States Army Corps of Engineers (USACE)

Submitted pursuant to:

National Environmental Policy Act of 1969 (NEPA), as amended, 42 U.S.C. Section 4332 *et seq.*; Council of Environmental Quality (CEQ) regulations, 40 CFR Section 1500 *et seq.*, Implementing NEPA; Federal Transit Laws, 49 U.S.C. Chapter 53; Environmental Impact and Related Procedures, 23 CFR Part 771, a joint regulation of the Federal Highway Administration and Federal Transit Administration implementing NEPA and CEQ regulations; Section 106 of the National Historic Preservation Act of 1966, 54 U.S.C. Section 306108; Section 4(f) of the Department of Transportation Act of 1966, as amended, 49 U.S.C. Section 303; Section 6(f)(3) of the Land and Water Conservation Fund Act of 1965, 16 U.S.C. Section 4601 – 4 *et seq.*; Clean Air Act, as amended, 42 U.S.C. Section 7401 *et seq.*; Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884); Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, 42 U.S.C. Section 4601 *et seq.*; Executive Order No. 12898 (Federal Actions to Address Environmental Justice in Minority and Low Income Populations); Executive Order No. 13166 (Improving Access to Services for Persons with Limited English Proficiency); Executive Order No. 11988 (Floodplain Management) as amended; other applicable federal laws and procedures; and all relevant laws and procedures of the State of Minnesota.

After publication of the Final Environmental Impact Statement (EIS), the Council will issue an Adequacy Determination for the Final EIS in accordance with Minnesota environmental law.

Upon consideration of the comments received on the Final EIS, FTA will issue the Record of Decision, which will document FTA's decision on the project and list the required mitigation commitments to reduce or avoid impacts.

4/27/2016

Date of Approval



Marisol Simón
Regional Administrator
Federal Transit Administration
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4.27.2016

Date of Approval



Mark Fuhrmann
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Abstract

The Metropolitan Council (Council) proposes to construct and operate the 14.5-mile Southwest Light Rail Transit (METRO Green Line Extension) Project (Southwest LRT) as an extension of the Central Corridor LRT (METRO Green Line) to provide transportation improvements in the southwest metropolitan region. The Southwest LRT would extend from Eden Prairie, Minnesota, through the cities of Minnetonka, Hopkins, and St. Louis Park, to downtown Minneapolis, passing in close proximity to Edina, and connecting to the METRO Green Line, which began revenue service in June 2014. Within the Final Environmental Impact Statement (Final EIS), the Project is defined as the Locally Preferred Alternative (LPA) plus the identified Locally Requested Capital Investments (LRCIs) as defined to date. The identified LPA is a light rail line alignment constructed and operating on the Kenilworth-Opus-Golden Triangle alignment, reflecting adjustments made subsequent to publication of the Draft EIS. In addition to the proposed light rail alignment, stations, park-and-ride lots, and ancillary facilities, including a proposed operations and maintenance facility (OMF), the LPA includes proposed related bus, roadway, and bicycle/pedestrian improvements, and related freight rail modifications.

The Final EIS includes the project's Purpose and Need Statement and a description of the alternatives currently and previously considered. The following environmental categories are addressed in the Final EIS, including related methods and regulations, agency coordination (where applicable), anticipated direct and indirect long-term, short-term (construction), and cumulative impacts, and committed mitigation measures: land use; economic activity; neighborhood and community; acquisitions and displacements; cultural resources; parks, recreation areas, and open spaces; visual quality and aesthetics; geology and groundwater resources; surface water resources; ecosystems; air quality and greenhouse gases; noise; vibration; hazardous and contaminated materials; electromagnetic interference; energy; and transportation (i.e., transit, roadways and traffic, parking, freight, pedestrian and bicycle, and safety and security). The Final EIS also addresses the following: environmental justice compliance; Section 4(f) compliance with a Final Section 4(f) Evaluation; finance; evaluation of alternatives; public involvement and agency coordination; and a potential related joint development project.

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Project Nomenclature

Forecast Year. The forecast year for this Final Environmental Impact Statement (EIS) is the year 2040 (revised from 2030 for the Draft EIS).

No Build Alternative. Required under the National Environmental Policy Act (NEPA) for all Environmental Impact Statements, the No Build Alternative represents the existing transportation system with all planned transportation improvements included in the Current Revenue Scenarios (i.e., financially constrained) of the 2040 Transportation Policy Plan (adopted January 2015), except for the Southwest Light Rail (LRT) Project Locally Preferred Alternative (LPA).

Locally Preferred Alternative. The Southwest LRT Project's Locally Preferred Alternative (LPA) was adopted by the Metropolitan Council (Council) as the Kenilworth-Opus-Golden Triangle (3A) LRT alignment in May 2010. Within the Draft EIS, the LPA was included within LRT 3A (Freight Rail Relocation) and LRT 3A-1 (Freight Rail Co-Location), with different freight rail alignments. In April and July of 2014, the Council identified adjustments to the LPA, which included the co-location of freight rail and light rail within the Kenilworth Corridor, similar to LRT 3A-1. The LPA was further adjusted by the Council in July 2015 to be a 14.5-mile double-tracked light rail extension of the existing METRO Green Line with 16 new light rail stations (including the Eden Prairie Town Center Station, which is deferred and not expected to be in place when the Project opens in 2020), and a new light rail operations and maintenance facility in Hopkins.

Locally Requested Capital Investments. Locally Requested Capital Investments (LRCIs) are improvements proposed by the Cities of Eden Prairie, Minnetonka, Hopkins, and St. Louis Park and Hennepin County to be undertaken separate from, but contingent upon, implementation of the LPA. These proposed improvements are not needed to support the base function of the LPA, nor do they represent mitigation for any impact of the LPA. These proposed activities may be implemented independently by the stakeholder cities at a future date, and are not conditions of the Southwest LRT LPA.

Project. Within this Final EIS, the Project is defined as the LPA plus the identified LRCIs as defined to date.

Environmentally Preferred Alternative. Section 1505.2(b) requires that, in cases where an EIS is prepared, the agency must specify the alternative or alternatives in the Record of Decision (ROD) that were considered to be environmentally preferable, which is generally the alternative that causes the least damage to the biological and physical environment and that best protects, preserves, and enhances historic, cultural, and natural resources. The Federal Transit Administration (FTA) has determined that the LPA with the retention of freight rail in the Kenilworth Corridor (LRT 3A-1) would be the Project's environmentally preferred alternative, rather than the LPA with the relocation of freight rail (LRT 3A).

Least Environmentally Damaging Practicable Alternative. Identification of the Least Environmentally Damaging Practicable Alternative (LEDPA) is a requirement of the U.S. Army Corps of Engineers (USACE) wetland permitting process under the Clean Water Act, as defined in 40 CFR Part 230.10(a). The LEDPA is defined as the alternative with the least impacts to the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. As a result of identified design adjustments to LRT 3A and LRT 3A-1, as documented in the NEPA/404 Merger Process – Southwest LRT Concurrence Points Package (submitted to the USACE by the Council on May 5, 2014), the USACE made the preliminary determination that LRT 3A-1 is Southwest LRT Project's LEDPA in October 2014. The USACE will make a final LEDPA determination as part of its review and approval of the Council's Section 404 wetland permit application, which will occur after publication of this Final EIS.

New Starts and Fixed Guideway Capital Investment Grant. Within this Final EIS, the terms *New Starts* and *Capital Investment Grant* (officially termed *Fixed Guideway Capital Investment Grant*) are used interchangeably. A Capital Investment Grant (CIG) provides funding for new and expanded rail, bus rapid transit, and ferry systems that reflect local priorities to improve transportation options in key corridors. Those projects include what are termed *New Starts Projects*, as well as *Small Starts* and *Core Capacity* projects.

Project Station Names. The following table presents the station names for the Proposed Project that are used throughout this Final EIS, compared to the official names of those stations.

Final EIS Station Name	Official Station Name^a
Royalston Station	Royalston Avenue/Farmers Market Station
Van White Station	Bassett Creek Valley Station
Penn Station	Bryn Mawr Station
21st Street Station	West 21st Street Station
West Lake Station	West Lake Street Station
Beltline Station	Beltline Boulevard Station
Wooddale Station	Wooddale Avenue Station
Louisiana Station	Louisiana Avenue Station
Blake Station	Blake Road Station
Downtown Hopkins Station	Downtown Hopkins Station
Shady Oak Station	Shady Oak Station
Opus Station	Opus Station
City West Station	City West Station
Golden Triangle Station	Golden Triangle Station
Eden Prairie Town Center Station	Eden Prairie Town Center Station
Southwest Station	SouthWest Station

^a Source: adopted by the Metropolitan Council, February 24, 2016.

Introduction to the Final Environmental Impact Statement

This Introduction provides a general overview of the Final Environmental Impact Statement (EIS), which updates information provided in the Draft EIS, published in October 2012 and the Supplemental Draft EIS, published in May 2015. This Introduction includes a general description of the Project, its current status relative to federal and state environmental processes, and an overall description of the purpose of the Final EIS. The information provided in this Introduction is only intended to provide a general orientation to the Final EIS, which should be referred to for more detailed information.

Project Description

The Southwest LRT (METRO Green Line Extension) is approximately 14.5 miles of new double track proposed as an extension of the METRO Green Line (Central Corridor LRT), which will operate from downtown Minneapolis through the communities of St. Louis Park, Hopkins, Minnetonka, and Eden Prairie, passing in close proximity to Edina. The proposed alignment includes 16 new light rail stations (including the Eden Prairie Town Center Station that is deferred for construction at a later date), approximately 2,500 additional park-and-ride spaces, accommodations for passenger drop-off, bicycle and pedestrian access, as well as new or restructured local bus route connection stations to nearby residential, commercial and education destinations. Major activity centers from Eden Prairie to St. Paul, including UnitedHealth Group campuses, the Opus/Golden Triangle employment area, Park Nicollet Methodist Hospital, the Minneapolis Chain of Lakes, downtown Minneapolis and St. Paul, the University of Minnesota, and the State Capitol area, will be accessible by a one-seat ride. Passengers will be able to connect to the greater METRO system, including METRO Blue Line (Hiawatha LRT), METRO Orange Line (I-35W Bus Rapid Transit [BRT]), Northstar Commuter Rail, METRO Red Line (Cedar Avenue BRT) via Blue Line, and the planned METRO Blue Line Extension (Bottineau LRT), as well as future commuter rail and planned Arterial BRT lines connecting at multiple locations on the METRO system.

The Metropolitan Council (Council) is the FTA grantee and will serve as the owner-operator of the completed Southwest LRT Line.

The Southwest LRT will operate primarily at-grade and with structures providing grade separation of LRT crossings, roadways and water bodies at specified locations. For just under one-half mile, it will operate in a shallow LRT tunnel in the Kenilworth Corridor south of the channel with an at-grade LRT bridge over the channel.

The westernmost station on the line will be located at Southwest Station in Eden Prairie, providing rail/bus connections at the existing transit center. Between Southwest Station and Glenwood Avenue in Minneapolis, the line will operate in dedicated right-of-way (ROW). From Target Field Station through downtown Minneapolis, the University of Minnesota, and downtown St. Paul, Southwest LRT service will be interlined/through-routed with the Green Line, sharing tracks on South 5th Street in downtown Minneapolis with the Blue Line.

The 16 planned stations along the Southwest LRT line are: Southwest, Eden Prairie Town Center (deferred), Golden Triangle, and City West Stations in Eden Prairie; Opus Station in Minnetonka; Shady Oak, Downtown Hopkins, and Blake Stations in Hopkins; Louisiana, Wooddale, and Beltline Stations in St. Louis Park; and West Lake, Penn, 21st Street, Van White, and Royalston Stations in Minneapolis.

An additional 27 light rail vehicles (LRVs) will be added to the Green Line fleet for the operation of the Southwest LRT line. The additional LRVs will be stored and maintained in a new operations and maintenance facility (OMF) to be located in Hopkins.

Additional project requirements include traction power substations (TPSS) to supply electrical power to the LRVs and signal bungalows housing equipment needed to operate and monitor train signals. The Council will identify specific sites for TPSS and signal bungalows during the Project Development and Engineering phases of the Project.

Regulatory and Project Background

The Federal Transit Administration (FTA), as the Project's lead federal agency, will ensure that the Project completes its environmental review process and documentation in compliance with the National Environmental Policy Act (NEPA). The Minnesota Environmental Policy Act (MEPA) requires that where federal laws have environmental document requirements in addition to but not in conflict with those in Minnesota Statutes, Section 116D.04, governmental units cooperate in fulfilling these requirements as well as those of state laws so that one document can comply with all applicable laws.

FTA issued its *Notice of Intent to prepare a Draft Environmental Impact Statement* for the Southwest Transitway Project in September 2008 and authorized the Project to advance into Preliminary Engineering (now termed Project Development) in September 2011. The Southwest Transitway Draft EIS was published by FTA, Hennepin County Regional Railroad Authority (HCRRA), and the Metropolitan Council (Council), in October 2012. The public comment period for the Draft EIS concluded on December 31, 2012. The Draft EIS evaluated seven alternatives, including the No Build and Enhanced Bus alternatives and five light rail alternatives. The five light rail alternatives also included proposed locations for freight rail currently operating on the Bass Lake Spur and Cedar Lake Junction, commonly known as the Kenilworth Corridor, rail lines. Four of the light rail alternatives included relocation of freight rail from a portion of the Bass Lake Spur and the Kenilworth Corridor to the Minneapolis, Northfield, and Southern Railway (MN&S) Spur near Louisiana Avenue South, then connecting to the Wayzata Subdivision (LRT 1A, LRT 3A, LRT 3C-1, and LRT 3C-2). The remaining alternative was a variation of LRT 3A, consisting of the same light rail alignment, but with freight rail remaining in its current location, co-located with light rail in the Bass Lake Spur and Kenilworth Corridor (LRT 3A-1). The Draft EIS also identified the Project's Locally Preferred Alternative (LPA), the LRT route included as part of LRT 3A and LRT 3A-1, which was adopted into the 2030 Transportation Policy Plan by the Council in May 2010. Within the Draft EIS, LRT 3A and LRT 3A-1 generally differ only in the location of freight rail within the cities of St. Louis Park and Minneapolis.

Following the end of the Draft EIS public comment period on December 31, 2012, local lead agency authority for completion of the environmental process transferred from HCRRA to the Council. At that time, the Project's name was changed from Southwest Transitway to Southwest LRT.

Based on comments submitted on the Draft EIS, the Council continued the Project Development process by identifying and evaluating adjustments to the LPA's light rail and related improvements, as defined in the Draft EIS. The Council also developed and evaluated adjustments to the design of the two sets of freight rail modifications evaluated in the Draft EIS (termed freight rail "relocation" and "co-location") and identified the freight rail modifications to be included within the LPA.

As Project Development activities continued, in coordination with the Project's advisory committees, stakeholders, and host cities and county, the FTA and the Council identified three areas requiring further environmental consideration based on the potential for new significant environmental impacts from the proposed Project not addressed in the Draft EIS. These three areas, which are listed below, were the focus of a Supplemental Draft EIS, which was published by FTA and the Council in May 2015.

- Eden Prairie Segment (generally between the intersections of Technology Drive and Mitchell Road and of Flying Cloud Drive and Valley View Road)
- The location of a new light rail Operations and Maintenance Facility (OMF) in the City of Hopkins
- St. Louis Park/Minneapolis Segment (generally between Louisiana Avenue South in St. Louis Park and Penn Avenue South in Minneapolis)

The public comment period for the Supplemental Draft EIS concluded on July 21, 2015.

The Council further adjusted the Project in July 2015, in part to reduce proposed project costs. These adjustments included elimination of Mitchell Station in Eden Prairie, making SouthWest Station the western most station in the Project, as well as adjustments to several project elements, including adjustments to proposed light rail park-and-ride lots and stations (including deferral of the proposed Eden Prairie Town

Center Station until after the Project's opening in 2020). These changes to the Project, made since publication of the Supplemental Draft EIS, are incorporated into this Final EIS.

Contents of the Final Environmental Impact Statement

The FTA and the Council prepared this Final EIS to comply with Federal NEPA and related requirements. The analysis in this Final EIS reflects design adjustments made since publication of the Project's Draft EIS and Supplemental Draft EIS.

The United States Army Corps of Engineers (USACE) is a federal Cooperating Agency for this project under NEPA. Impacts to waters of the United States associated with the Southwest LRT Project will require an Individual Permit under Section 404 of the Clean Water Act; this permit program is administered by the USACE. This Final EIS reflects coordination to date between FTA and USACE on the NEPA/Section 404 merger process, which has led to the USACE making a preliminary determination that the Project as described in this Final EIS is the Least Environmentally Damaging Practicable Alternative (LEDPA) for the Southwest LRT Project.

The Final EIS was also prepared to comply with the Minnesota environmental regulations.

The Final EIS addresses the following items:

- The Project's Purpose and Need Statement from the Draft EIS and the Supplemental Draft EIS (see Chapter 1)
- A description of the Project and the No Build Alternative, including base year costs, as well as a description of other alternatives developed and considered in the Project's Alternatives Analysis, Scoping, Draft EIS and Supplemental Draft EIS (see Chapter 2)
- A description of 16 environmental categories, including methods, regulations, affected environment, analysis of long-term, short-term direct and indirect impacts, cumulative impacts, and mitigation measures (see Chapters 3)
- A description of six transportation categories, including methods, regulations, affected environment, analysis of long-term, short-term direct and indirect impacts, and mitigation measures (see Chapters 4) (cumulative transportation impacts are addressed in Chapter 3)
- An overview of the Project's environmental justice compliance, including the Project's final environmental justice finding (see Chapter 5)
- An overview of the Project's compliance with the federal Section 4(f) requirements addressing publicly owned parks and recreation areas, historic resources, and publicly owned wildlife and waterfowl refuges (see Chapter 6)
- A description of the next steps, funding, and actions under NEPA and MEPA (see Chapter 7)
- An evaluation of alternatives (see Chapter 8)
- A summary of agency coordination and community outreach activities and known governmental permits and approvals (see Chapter 9)
- A summary of impacts associated with joint development efforts associated with the Project (see Chapter 10)

The following list briefly describes the contents of the appendices to the Final EIS:

- A list of recipients of the Final EIS (see Appendix A)
- A list of project team members who helped prepare the Final EIS (see Appendix B)
- A list of the supporting documents and technical reports to the Final EIS that are incorporated by reference, including information on how to obtain copies of the documents (see Appendix C)
- A list of sources and references that are cited within the Final EIS (see Appendix D)

- Preliminary engineering plans showing the current Project and lists of capital improvements under the Project (see Appendix E)
- A description of design adjustments developed and evaluated between publication of the Draft EIS and the Supplemental Draft EIS (see Appendix F)
- Public notices since publication of the Project's Notice of Intent to publish an EIS (see Appendix G)
- The documentation of the Section 106 determinations of effects for historic resources and the Section 106 Memorandum of Agreement, which addresses historic resources adversely affected by the Project (see Appendix H)
- Supporting documentation for the Final 4(f) Evaluation (see Appendix I)
- Supporting documentation for the visual resources analysis (see Appendix J)
- Memoranda providing additional detail on the noise and vibration (see Appendix K)
- Comments received on the Draft EIS and responses (see Appendix L)
- Comments received on the Supplemental Draft EIS and responses (see Appendix M)
- Copies of resource agency coordination letters received since the close of the Draft EIS public comment period (see Appendix N)

Acronyms and Abbreviations

µg/m ³	micrograms per cubic meter
2040 TPP	2040 Transportation Policy Plan
AA	Alternatives Analysis
AADT	annual average daily traffic
AASHTO	American Association of State Highway and Transportation Officials
ABRT	Arterial Bus Rapid Transit
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
ADA	Americans with Disabilities Act
AMS	American Medical Systems
ANSI	American National Standards Institute
APE	Area of Potential Effect
BAC	Business Advisory Committee
BCWMC	Bassett Creek Watershed Management Commission
BEA	Bureau of Economic Analysis
BMP	Best Management Practice
BRCC	Blake Road Corridor Collaborative
BRT	bus rapid transit
Btu	British thermal unit
CAA	Clean Air Act
CAC	Community Advisory Committee
Caltrans	California Department of Transportation
CCP	Construction Contingency Plan
Census	United States Census Bureau
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CET	Corridors of Opportunity's Community Engagement Team
CFR	Code of Federal Regulations
CGP	Construction General Permit
CIG	Capital Investment Grant
CMC	Corridor Management Committee

CNG	Compressed Natural Gas
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
Council	Metropolitan Council
CP	Canadian Pacific Railway
CPI	Consumer Price Index
CPIP	Communications and Public Involvement Plan
CRU	Cultural Resources Unit
CSAH	county state aid highway
CTIB	Counties Transit Improvement Board
CTUL	Centro de Trabajadores Unidos en la Lucha
CWA	Clean Water Act
dB	decibel
dBA	decibels on an A-weighted scale
DC	direct current
DCE	dichloroethene
DMU	Diesel Multiple Unit
DOI	Department of Interior
DOT	United States Department of Transportation
EB	eastbound
ECCO	East Calhoun Community Organization
EIS	environmental impact statement
EJ	Environmental Justice
EMF	electromagnetic fields
EMI	electromagnetic interference
EMR	electromagnetic radiation
EMU	Electric Multiple Unit
Environmental Justice Circular	Environmental Justice Policy Guidance for Federal Transit Administration Recipients
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
ESA	environmental site assessment
FAQ	Frequently Asked Questions
FEMA	Federal Emergency Management Agency

FFRMS	Federal Flood Risk Management Standard
FHWA	Federal Highway Administration
FIA	National Flood Insurance Act of 1968
FIRM	Flood Insurance Rate Map
FR	Federal Register
FRA	Federal Railroad Authority
FTA	Federal Transit Authority
GEARS	Grant Evaluation and Ranking System Committee
GHG	greenhouse gas
GIS	geographic information system
GRHD	Grand Rounds Historic District
HASP	Health and Safety Plan
HCM	Highway Capacity Manual
HCRRA	Hennepin County Regional Railroad Authority
HEI	Health Effects Institute
HEPA	high efficiency particulate air
HOT	high-occupancy toll
HOV	High-occupancy vehicle
HPO	Historic Preservation Officer
HVAC	heating, ventilation, and air conditioning
Hz	Hertz
ICA	Intercongregation Communities Association
ICE	Infrastructure Carbon Estimator
IRIS	Integrated Risk Information System
KPRHD	Kenwood Parkway Residential Historic District
KPRHD	Kenwood Parkway Residential Historic District
L10	Noise level exceeded 10 percent of the time over a given time period
L50	Noise level exceeded 50 percent of the time over a given time period
Ldn	Day-Night Sound Level
LEDPA	Least Environmentally Damaging Practicable Alternative
Leq	equivalent sound level
LGU	local government unit
LIRHD	Lake of the Isles Residential Historic District
LOD	limits of disturbance
LOS	level of service
LPA	Locally Preferred Alternative

LRCI	locally requested capital investment
LRT	light rail transit
LRV	Light Rail Vehicle
LUST	leaking underground storage tank
M&StL	Minneapolis & St. Louis Railway
MAP-21	Moving Ahead for Progress in the 21st Century Act
MARQ2	Marquette and 2nd Avenue Project
MBS	Minnesota Biological Survey
MCES	Metropolitan Council Environmental Services
MCWD	Minnehaha Creek Watershed District
MDH	Minnesota Department of Health
MEPA	Minnesota Environmental Policy Act
MES	master entity system
MICAH	Metropolitan Interfaith Council on Affordable Housing
MLCCS	Minnesota Land Cover Classification System
MN	Minnesota
MN&S	Minneapolis, Northfield, and Southern Railway
MnBWSR	Minnesota Board of Water and Soil Resources
MnDNR	Minnesota Department of Natural Resources
MnDOT	Minnesota Depart of Transportation
MnHPO	Minnesota Historic Preservation Officer
MN Stat	Minnesota Statute
Model	Council's Regional Travel Demand Forecast Model
MPCA	Minnesota Pollution Control Agency
mph	miles per hour
Mpls	City of Minneapolis
MPRB	Minneapolis Parks and Recreation Board
MS4	Municipal Separate Storm Sewer System
MSA	Metropolitan Statistical Area
MSA	municipal state aid
MSAT	Mobile Source Air Toxic
MSVP	Motor Vehicle Sales Tax Reserves
MT	metric tons
MUSA	Metropolitan Urban Service Area
MUTCD	Minnesota Manual of Uniform Traffic Control Devices
MVST	Motor Vehicle Sales Tax

MVTA	Minnesota Valley Transit Authority
MWMO	Mississippi Watershed Management Organization
N/A	not available/not applicable
N/C	size not calculated
NAA	New American Academy
NAAQS	National Ambient Air Quality Standards
NATA	National Air Toxics Assessment
ND	no data collected
NEPA	National Environmental Policy Act of 1969
NFIA	National Flood Insurance Act of 1968, as amended
NFIP	National Flood Insurance Program
NFRAP	no further remedial action planned
NHIS	Natural Heritage Information System
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMCWD	Nine Mile Creek Watershed District
NMFS	National Marine Fisheries Service
NO ₂	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
O&M	operations and maintenance
OCS	overhead structures
OMF	Operations and Maintenance Facility
OSHA	Occupational Safety and Health Administration
PAC	Southwest Transitway Policy Advisory Committee
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PCP	pentachlorophenol
PEC	Preliminary Engineering Consultant
PFOS	perfluorooctane sulfonate
PLP	Permanent List of Priorities
PM ₁₀	particulate matter less than 10 microns in aerodynamic diameter

PM2.5	articulate matter less than 2.5 microns in aerodynamic diameter
ppb	parts per billion (by volume)
ppm	parts per million (by volume)
Project	Southwest Light Rail Transit Project Locally Preferred Alternative
PWI	Public Waters Inventory
RAP	Response Action Plan
RCRA	Resource Conservation and Recovery Act of 1976
REC	Regional Ecological Corridor
RHA	Rivers and Harbors Act of 1899
RIMS	Regional Input-Output Modeling System
ROD	Record of Decision
ROW	right-of-way
RPBCWD	Riley Purgatory Bluff Creek Watershed District
RRA	Regional Railroad Authorities
RTIP	Regional Transportation Improvement Program
RTP	Regional Transportation Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SCC	Standardized Cost Category
Section 106	Section 306108 of the National Historic Preservation Act
SEL	sound exposure level
Services, the	U.S. Fish and Wildlife Service and National Marine Fisheries Service
SIP	State Implementation Plan
SO2	sulfur dioxide
SOI's Standards	Secretary of the Interior's Standards for the Treatment of Historic Properties
SPCC	Spill Prevention, Control, and Countermeasure
SRV S	oil Reference Value
staging plan	construction staging plan
Stat.	Statute
STB	Surface Transportation Board
SWPPP	Stormwater Pollution Prevention Plan
TAC	Technical Advisory Committee
TAZ	Transportation Analysis Zone
TBD	to be determined
TC	transit center
TC&W	Twin Cities and Western Railway Company

TCE	trichloroethene
TCRP	Transit Cooperative Research Program
TDH	Telephonics Dynamic Headphone
TEA-21	Transportation Equity Act for the 21st Century of 1998
TEP	Technical Evaluation Panel
TIP	Transportation Improvement Program
Title VI Requirements and Guidelines Circular	Title VI of the Civil Rights Act of 1964, FTA Circular, FTA C 4702.1B, Title VI Requirements and Guidelines for Federal Transit Administration Recipients
TLC	transit for livable communities
TMDL	total maximum daily load
TOD	transit-oriented development
TPAC	Technical Project Advisory Committee
TPAR	temporary pedestrian access route
TPP	Transportation Policy Plan
TPSS	Traction Power Substation
TRPD	Three Rivers Park District
TSAAPs	Transitional Station Area Action Plans
TSM	Transportation Surface Management
TSP	Traffic Signal Priority
U of MN	University of Minnesota
U.S.C.	United States Code
Uniform Act/ Uniform Relocation Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act
URT	urban rapid transit
USACE	United States Army Corps of Engineers
USBEA	United States Bureau of Economic Analysis
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
UST	underground storage tank
VdB	vibration decibel
VHD	vehicle hours of delay
VHT	vehicle hours traveled
VIC	Voluntary Investigation and Cleanup Program
VMT	vehicle miles traveled
VOC	volatile organic compound

WB	westbound
WCA	Wetlands Conservation Act of 1991
WHPP	Wellhead Protection Plan
WMO	watershed management organization
WPA	Works Progress Administration
YOE	Year of Expenditure

SOUTHWEST LRT (METRO GREEN LINE EXTENSION)

Final Environmental Impact Statement (EIS) Executive Summary

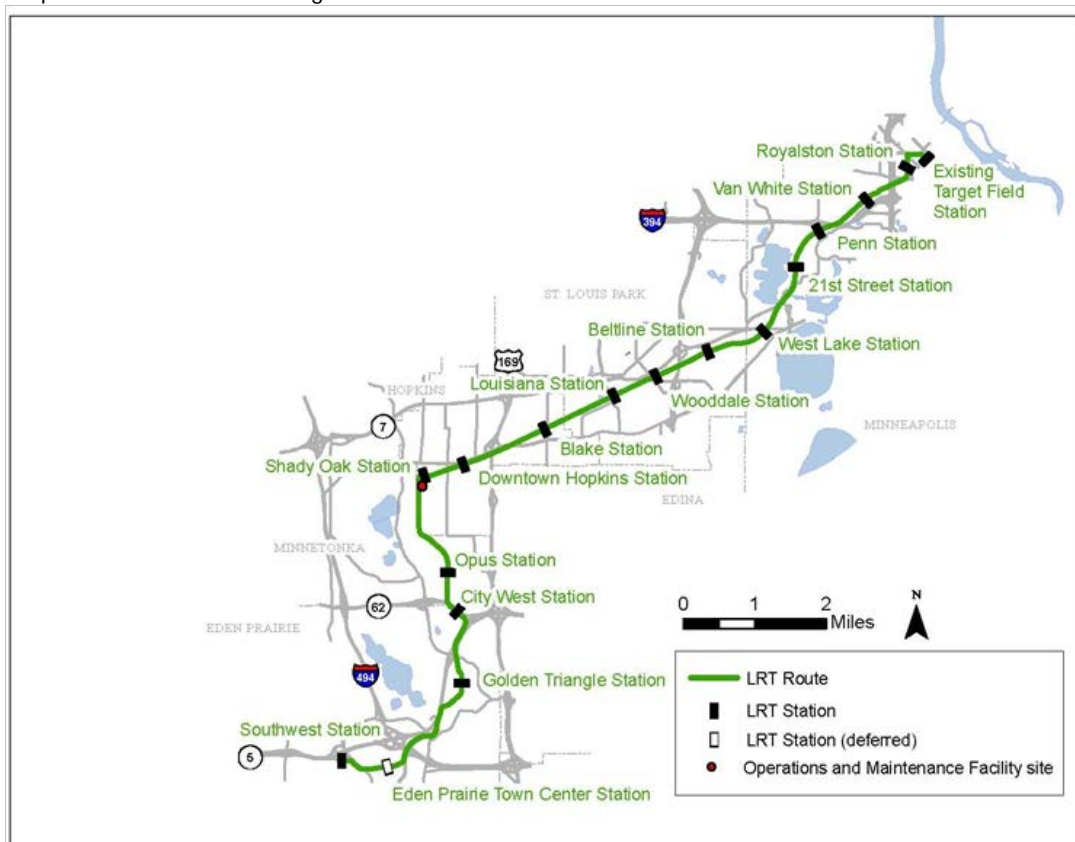
1. WHAT IS THE SOUTHWEST LRT (METRO GREEN LINE EXTENSION) PROJECT?

The Southwest Light Rail Transit (LRT) (METRO Green Line Extension) Project is approximately 14.5 miles of new double-track LRT proposed extension of the METRO Green Line (Central Corridor LRT), which will operate from downtown Minneapolis through the communities of St. Louis Park, Hopkins, Minnetonka, and Eden Prairie, passing in close proximity to Edina (see Exhibit ES-1). The proposed alignment includes the following features:

- 16 new stations¹ (including the Eden Prairie Town Center Station that is deferred for construction at a later date)
- Approximately 2,500 additional park-and-ride spaces at nine lots
- Accommodations for passenger drop-off facilities
- Bicycle and pedestrian access
- New or restructured local bus routes connecting stations to nearby residential, commercial, and educational destinations
- One Operations & Maintenance Facility located in the City of Hopkins, Minnesota

EXHIBIT ES-1

Proposed Southwest LRT Alignment



¹ See the Project Nomenclature for a listing of the station names used in this Final EIS, compared to the official station names adopted by the Council on February 24, 2016. In particular, following are four of the station names used in the Final EIS, compared to their official names, respectively: Royalston Station = Royalston Avenue/Farmers Market Station; Van White Station = Bassett Creek Valley Station; Penn Station = Bryn Mawr Station; and 21st Street Station = West 21st Street Station.

Under the Project's Locally Preferred Alternative (LPA), major activity centers between Eden Prairie and St. Paul would be accessible by a one-seat ride. These activity centers include the Eden Prairie Center regional mall, UnitedHealth Group campuses, the Opus/Golden Triangle employment area, Park Nicollet Methodist Hospital, the Minneapolis Chain of Lakes, downtown Minneapolis, the University of Minnesota, the State Capitol area, and downtown St. Paul. Passengers would be able to connect to the greater METRO system, including METRO Blue Line (Hiawatha LRT), METRO Orange Line (I-35W Bus Rapid Transit [BRT]), Northstar Commuter Rail, METRO Red Line (Cedar Ave BRT) via METRO Blue Line, and the planned METRO Blue Line Extension (Bottineau LRT). The Metropolitan Council (Council) is the Federal Transit Administration (FTA) grantee. The Council will be the owner-operator of the completed Southwest LRT Line.

2. WHAT IS THE PURPOSE AND NEED FOR THE PROPOSED PROJECT?

The Purpose and Need provides the foundation for the proposed Project (see Chapter 1 of the Final Environmental Impact Statement [EIS]). The Purposes of the proposed Southwest LRT Project are summarized below:

- Improve access and mobility to the jobs and activity centers in the Minneapolis central business district and the expanding southwest suburban employment centers
- Provide a competitive, cost-effective travel option to attract choice riders to the transit system, in an area of the region experiencing congested roadway connections between corridor cities and downtown Minneapolis
- Be part of an efficient system of integrated regional transitways serving the Twin Cities

The Need for the Project is summarized as follows: Since the late 1980s, the Council has identified that the Southwest Corridor warrants a high level of transit investment to respond to increasing travel demand in this highly congested area of the region. This area of the Twin Cities experiences daily congestion on the roadway network, speed and use limitations within shoulder bus operations, and capacity constraints in downtown Minneapolis. Four primary factors make the Southwest LRT Project important for people who live and work in the southwest metropolitan area: (1) declining mobility; (2) limited competitive, reliable transit options for choice riders and people who rely on public transportation, including reverse-commute riders; (3) the need to maintain a balanced and economically competitive multimodal freight system; and (4) regional and local plans calling for investment in additional LRT projects in the region. These four need factors are discussed in Sections 1.5 through 1.8 of the Final EIS, respectively.

3. WHO ARE THE PROJECT'S LEAD AGENCIES AND SPONSORS?

The FTA is the federal lead agency for the Project. The Council is the Project's local lead agency and project sponsor. The Hennepin County Regional Railroad Authority (HCRRA) served as the local lead agency during development of the Draft EIS and its public comment period, which concluded in December 2012.

4. WHO ARE THE PROJECT'S COOPERATING AGENCIES AND WHAT ROLE DOES A COOPERATING AGENCY PLAY?

The United States Army Corps of Engineers (USACE) is the federal cooperating agency for the Final EIS. A cooperating agency is a federal agency, other than a lead agency, that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposed project or project alternative (40 Code of Federal Regulations [CFR] Part 1508.5). The USACE is responsible for implementing the National Environmental Policy Act of 1969 (NEPA²) and related laws and Section 404 of the Clean Water Act. A distinguishing feature of a cooperating agency is that the Council on Environmental Quality regulations (40 CFR Part 1506.3(c)) permit a cooperating agency to "adopt without recirculation of the environmental impact statement of a lead agency when, after an independent review of the statement, the cooperating agency concludes that its comments and suggestions have been satisfied."

² National Environmental Policy Act of 1969 (NEPA), as amended, 42 U.S.C. Section 4332

5. WHAT JURISDICTIONS ARE PARTICIPATING IN THE PROJECT?

Local jurisdictions that are participating in the Project include Hennepin County, the cities of Eden Prairie, Minnetonka, Edina, Hopkins, St. Louis Park, and Minneapolis, and the State of Minnesota. Chapter 9 of the Final EIS provides more detail about the Project's participating agencies and agency coordination.

6. WHAT DOES THE SCOPING REPORT CONTAIN FOR THE PROJECT AND WHEN WAS IT RELEASED?

In September 2008, HCRRA and FTA published the Project's federal *Notice of Intent to Prepare an EIS* (FTA, 2008b) and state Notice of EIS Preparation (Minnesota Environmental Quality Board, 2008). HCRRA began development of NEPA and Minnesota Environmental Policy Act (MEPA³) documentation with the Project's Scoping Process, including publication of the *Southwest Transitway Scoping Summary Report* in January 2009 (Scoping Report. HCRRA, 2009). The Scoping Report describes the Project's Scoping Process, alternatives proposed and evaluated, the public and agency review process, and the outcome of the Scoping Process through the time of its publication. The build alternatives presented for comment during the Scoping Process included LRT 1A, LRT 3A, LRT 3C, and the Enhanced Bus Alternative, all of which were advanced into the Draft EIS for further study (two variations of LRT 3C were ultimately defined and evaluated within the Draft EIS, LRT 3C-1 and LRT 3C-2). The Scoping Report also describes the source and evaluation of other alternatives that were proposed by others during the Scoping Period, from September 8 through November 7, 2008, but that were not advanced into the Draft EIS for further study.

On May 26, 2010, prior to the completion of the Draft EIS and based on an extensive alternatives analysis and public involvement process, the Council adopted the Project's LPA as recommended by HCRRA and included it as part of the 2030 Transportation Policy Plan. The identified LPA is LRT constructed and operating on the Kenilworth-Opus-Golden Triangle alignment, referred to at the time as Alternative LRT 3A.

As noted in Section 2.1.2.1 of the Draft EIS, at the time the Southwest Transitway Scoping Summary Report was published in January 2009, the relocation of freight trains onto the MN&S Spur and Wayzata Subdivision was considered a separate, disconnected action from the Southwest Transitway Project and would, therefore, be outside the scope of the Southwest Transitway Draft EIS (see Section 5.3 of the Southwest Transitway Scoping Summary Report). In September 2011, within its letter authorizing the Project to enter Preliminary Engineering, FTA directed that the EIS should analyze the impacts of relocating Twin Cities and Western Railway Company (TC&W) freight trains onto the MN&S Spur and Wayzata Subdivision coupled with the LPA (LRT 3A) and that any proposed freight rail relocation should be considered part of the Project's scope and budget, regardless of the funding source, to comply with segmentation concerns under NEPA. In addition, as part of the NEPA process, FTA requested that an alternative be included that would co-locate freight rail and LRT operations in the Kenilworth Corridor in the Draft EIS (LRT 3A-1). Based on this direction from FTA, on September 25, 2012, HCRRA amended the Southwest Transitway Scoping Summary Report (which serves as the Scoping Decision Document under MEPA) to include the impacts of relocating freight rail for each of the build alternatives (LRT 1A, LRT 3A, LRT 3C-1, and LRT 3C-2), and for a co-location alternative where freight rail, light rail and the commuter bike trail co-locate from Louisiana Avenue to Penn Avenue (LRT 3A-1). The amendment was authorized with approval of Board Action Request 12-HCRRA-0049. Notice of the amendment to the scoping report was issued in the Environmental Quality Board (EQB) Monitor on October 15, 2012. See Section 2.2 of the Final EIS for additional information on the Project's Alternatives Analysis and EIS Scoping Process.

7. WHY DID THE PROJECT CHANGE TO CO-LOCATE THE FREIGHT RAIL AND LIGHT RAIL IN THE KENILWORTH CORRIDOR?

The Final EIS describes the process the Council used to develop and evaluate design adjustments since completion of the Draft EIS, including potential freight rail modifications that were evaluated in the Supplemental Draft EIS. The Draft EIS evaluated two alternatives for incorporating freight rail modifications into the LPA. Under LRT 3A, TC&W freight trains currently operating on a portion of the Bass Lake Spur and

³ Minnesota Statutes, section 116D.04 and 116D.045 and the administrative rules adopted by the EQB as Minnesota Rules, chapter 4410, parts 4410.0200 to 4410.7070

in the Kenilworth Corridor would be rerouted to the MN&S Spur and Wayzata Subdivisions. Under LRT 3A-1, TC&W freight trains would continue to operate in the Bass Lake Spur and Kenilworth Corridor. LRT 3A and LRT 3A-1 are also referred to in the Draft EIS as freight rail “relocation” and “co-location,” respectively. As noted in the Draft EIS and Supplemental Draft EIS, LRT 3A and LRT 3A-1 would provide the same transit service, with differing freight rail options, therefore the LPA is incorporated within both LRT 3A and LRT 3A-1.

After the close of the Draft EIS public comment period, the Council and FTA reviewed the comments received on the Draft EIS. Of note was the U.S. Army Corps of Engineers (USACE) designation of LRT 3A-1 (co-location) as the least environmentally damaging practicable alternative. As a result of that designation, the FTA and Council were required to consider the co-location alternative in greater detail to satisfy the requirements under the Clean Water Act (CWA). The USACE is a cooperating agency under NEPA for the Project and must determine whether the Project complies with the CWA Section 404(b)(1) (Guidelines). The USACE stated “as proposed [in the Draft EIS] the chosen LPA, alternative LRT 3A, would not qualify as the least environmentally damaging practicable alternative, which as proposed would be alternative LRT 3A-1 (co-location).”

In addition, TC&W, the freight carrier operating on the existing freight rail line within the co-location segment of the Kenilworth Corridor, expressed concern that LRT 3A (freight rail relocation) would likely result in increased costs for TC&W to operate its trains to and from shippers in greater Minnesota and result in operational issues related to track alignments, and therefore TC&W and its shippers were opposed to LRT 3A as presented in the Draft EIS. TC&W is a private freight rail operator with operating rights within the Kenilworth Corridor, granted by a Trackage Rights Agreement (TRA) executed in 1998. As described in Section 5 of the TRA, terminating or vacating the freight rail service along the Kenilworth Corridor requires agreements by either TC&W or the Canadian Pacific (Soo Line), or after a new connection between the current operating route of TC&W and the MN&S Spur becomes operational, or at such time as other feasible alternative(s) satisfactory to TC&W become available and operational.

Based on the comments received on the Draft EIS and through meetings with the public, businesses, municipalities, and other groups, the Council initiated a process to develop adjustments to the Project’s design. The design adjustment process included a four-step process to develop and evaluate adjustments to LRT 3A and LRT 3A-1 directly related to the following: (1) whether TC&W freight trains currently operating along the Kenilworth Corridor should be rerouted to sections of the MN&S Spur and Wayzata Subdivision; or (2) whether the TC&W freight trains should continue to operate along the Bass Lake Spur and Kenilworth Corridor as they currently do. Following is a brief description of the process used to develop and evaluate adjustments to LRT 3A and LRT 3A-1 (see Section 2.2 and Appendix F of the Final EIS for additional detail):

- The first step evaluation included the development of a relatively wide range of adjustments to the light rail improvements and freight rail-related modifications under the two freight rail operating scenarios (relocation and co-location), focusing on meeting key design parameters, while avoiding or minimizing adverse impacts and minimizing Project costs. Based on comments received from the public, stakeholders, and participating agencies and on various evaluation measures, the potential design adjustments were narrowed to one freight rail relocation and two co-location adjustments.
- The second step evaluation included a detailed analysis of the potential adjustments identified in the first step evaluation, narrowing to one design adjustment under each of the two freight rail operating scenarios (relocation and co-location).
- The third step evaluation included the refinement of the two second step design adjustments, addressing public and agency comments, followed by a detailed assessment of the tradeoffs between the two potential adjustments remaining after the second-step evaluation. As a result of the third step evaluation, the Freight Rail Relocation Brunswick Central design adjustment was dismissed from further study and the Shallow LRT Tunnel – Over Kenilworth Lagoon adjustment was advanced into the fourth step evaluation (see Exhibit 2.3-9).

- The fourth step evaluation involved three primary components: (1) preparation of an independent study that identified the MN&S North design adjustment for further evaluation; (2) development and evaluation of Shallow Cut-and-Cover Tunnel design variations; and (3) identification of additional design adjustments reflected in a memorandum of understanding between the Council and the City of Minneapolis.

In October 2013, as directed by the Chair of the Metropolitan Council, in coordination with Minnesota Governor Mark Dayton, the Council commissioned an independent study to conduct a review of existing and potential freight rail relocation alternatives. The independent study evaluated eight previously identified freight rail route options, two additional concepts developed by the Council, and one additional concept developed by the firm commissioned to conduct the study. None of the design options were found to be satisfactory by TC&W from an operational or safety standpoint (refer to Appendix F of the Final EIS for additional information and Appendix D for how to access the independent study). The results of the study were incorporated into the fourth step of the evaluation process discussed above. In addition, abandonment and discontinuance of rail lines is governed by federal statute (49 U.S.C. § 10903), and neither the FTA nor the Council have authority over freight rail service in the Kenilworth Corridor on a temporary or permanent basis. The TRA gives TC&W and Canadian Pacific Railway (CP) the right to transport freight cargo over the Kenilworth Corridor, without restriction as to the type of freight cargo. In light of the broad statutory preemptions enacted by the US Congress in the Interstate Commerce Commission Termination Act of 1995, 49 U.S.C. § 10501(b) and the Federal Rail Safety Act, 49 U.S.C. §§ 20101-20153, the Council, HCRRA, the City of Minneapolis, the State, and FTA cannot compel TC&W to relocate their operations. The co-location alternative selected by the Council accordingly does not result in any change to current rail operations.

Based on the analysis, committee recommendations, and public comments received during the process, the Council adopted in April 2014 freight rail co-location and the Shallow LRT Tunnel – Over Kenilworth Lagoon alignment (i.e., LRT 3A-1 – co-location) as part of the LPA. A Supplemental Draft EIS was developed to further evaluate these adjustments made to LRT 3A-1. Relative to the other options considered, the Shallow LRT Tunnel – Over Kenilworth Lagoon design adjustment would best balance costs, benefits, and environmental impacts, and best meet the Project's Purpose and Need. See Section 8.4 for a description of the determination that the LPA with freight rail retained in the Kenilworth Corridor (LRT 3A-1) would be the Project's environmentally preferred alternative, rather than the LPA with the relocation of freight rail (LRT 3A).

As a result of this design adjustment process, the USACE stated "The project scope as identified by the Council on April 9, 2014, which would retain existing freight rail service in the Kenilworth Corridor, is consistent with USACE's comment letter from December 20, 2012, stating that LRT 3A-1, which would also have retained existing freight rail service in the Kenilworth Corridor, meets the USACE project purpose and has the least amount of impact to aquatic resources . . ." (page 5). LRT 3A-1 was advanced, in part, based on USACE's identification of LRT 3A-1 as the LEDPA.

In addition to the evaluation process described above, Governor Dayton requested that the Council review a range of lower cost transit options, including the No Build Alternative, Enhanced Bus, and Bus Rapid Transit (BRT) Alternatives (see <http://metro council.org/getdoc/73777f40-2fd1-48c8-af49-a62531e581c2/Presentation.aspx>). In summary, the CMC reviewed the analysis of lower cost transit options and dismissed these alternatives, as they do not meet the Project's Purpose and Need. The prior evaluation of these alternatives is also documented in Section 2.2 of the Final EIS, which provides the rationale for why the Enhanced Bus and BRT alternatives were previously dismissed from further study.

In summary, with the changes made during the design adjustment process and in comparison to freight rail relocation (LRT 3A), freight rail co-location (LRT 3A-1) would:

- result in less harm to Section 4(f) protected properties;
- maintain regional freight rail connectivity;
- minimize reconstruction of freight rail tracks and construction-related disruptions;

- avoid diminishing the potential for transit oriented development around light rail stations located in the vicinity of freight rail tracks;
- avoid the displacement of any residents or businesses in the Kenilworth Corridor due to Project construction;
- include bicycle and pedestrian improvements that would provide connections between light rail stations and their surrounding neighborhoods; and,
- minimize the displacement of wetlands and satisfy the concerns of the USACE.

Based on the steps taken and process followed to identify LRT 3A-1 as the environmentally preferred alternative, the Final EIS does not include a detailed analysis on the impacts from the relocation of freight rail, as part of LRT 3A, for the following environmental categories as identified in comment letters:

- Land use
- Economic activity
- Neighborhoods and community
- Acquisitions and displacements
- Cultural resources
- Parks, recreation areas and open spaces
- Visual quality
- Geology and groundwater
- Water resources (i.e., wetlands, stormwater, and floodplains)
- Ecosystems
- Air quality
- Noise
- Vibration
- Hazardous and contaminated materials
- Electro-magnetic interference and utilities
- Energy
- Transit
- Roadways and traffic
- Parking
- Pedestrian and bicycle
- Safety and security

8. WHAT DESIGN ADJUSTMENTS WERE MADE AFTER PUBLICATION OF THE SUPPLEMENTAL DRAFT EIS?

Since the completion of the Supplemental Draft EIS in 2015, the Council advanced the level of design detail for the Project. This additional level of design detail resulted in better understanding of the proposed Project's impacts, and avoidance, minimization, and mitigation measures. Reflecting the advanced level of design, the Council released a revised Project cost estimate that exceeded prior cost estimates. The Council's CMC and Project staff developed and evaluated a variety of options to reduce Project costs in consultation with the Project's local participating jurisdictions. In July 2015, the Council reviewed those options and adopted design adjustments by identifying reductions to the Project's scope. The reductions in the Project's scope included: the elimination of the Mitchell Station (which was identified as an option in the Supplemental Draft EIS) and deferral of the Eden Prairie Town Center Station (that is deferred for construction at a later date); the reduction of five new light rail vehicles; the reduction of park-and-ride capacity from 3,834 spaces to 2,487 spaces; the reduction in the size of the proposed Hopkins OMF (with future expansion capacity on-site); elimination of station artwork; and reductions in landscaping and off-platform station furnishings.

9. WHAT ALTERNATIVES ARE ADDRESSED IN THE FINAL EIS?

This Final EIS evaluates the Project and the No Build Alternative:

- **Project.** The proposed Project includes both the **LPA** (based on LRT 3A-1, co-location) and **Locally Requested Capital Investments** (LRCIs). The LPA is approximately 14.5 miles of new double track proposed as an extension of the METRO Green Line (Central Corridor LRT) that will allow for the co-location of freight rail and light rail in the Kenilworth Corridor (i.e., LRT 3A-1). The proposed alignment includes 16 new light rail stations (including the Eden Prairie Town Center Station that is deferred for construction at a later date), approximately 2,500 additional park-and-ride spaces, accommodations for passenger drop-off, and bicycle and pedestrian access, as well as new or restructured local bus route connection stations to nearby residential, commercial, and education destinations. The LRCIs include proposed projects related to roadway, streetscape/landscape/aesthetic improvements, pedestrian/bicycle improvements, utilities, and guideway profile to be funded by local jurisdictions.
- **No Build Alternative.** The No Build Alternative represents future conditions without the Project. The No Build Alternative represents the existing transportation system with all planned transportation improvements included in the Current Revenue Scenarios (i.e., financially constrained) of the regional 2040 Transportation Policy Plan (adopted January 2015), except for the Southwest LRT Project LPA. The No Build Alternative represents a possible outcome of the EIS process and functions as a reference point to gauge the benefits, costs, and impacts of the Project. NEPA and MEPA processes also require consideration of the No Build Alternative.

Mobility issues and high-capacity transit improvements in the corridor extending southwest from downtown Minneapolis have been evaluated by the Council and HCRRA since the mid-1980s. The Final EIS also includes a summary of the alternatives previously studied. The Project is a product of the following key environmental and planning efforts for high-capacity transit in the Southwest Corridor: Southwest Transitway Alternatives Analysis; Draft EIS; Supplemental Draft EIS; and design adjustments since publication of the Supplemental Draft EIS.

10. HOW IS THE PROJECT AFFECTING FREIGHT RAIL FACILITIES AND OPERATIONS?

Based on adjustments that the Council identified in April and July 2014, the Project includes LRT 3A-1 which includes the continued operation of TC&W freight trains along the Bass Lake Spur and Kenilworth Corridor (i.e., “co-location”). The following modifications to the existing freight rail alignment will be made to accommodate the introduction of light rail in the Bass Lake Spur and Kenilworth Corridor.

- Beginning just east of Excelsior Boulevard in Hopkins and extending to east of Beltline Boulevard (approximately 17,400 feet), the existing freight rail tracks will be shifted north approximately 45 feet, allowing the proposed light rail alignment to be located south of the freight rail tracks (thereby providing better station connections to local activity centers).
- To facilitate the shift of the existing freight rail tracks, the Council intends to purchase the 6.8-mile Bass Lake Spur from CP Railway.
- A portion of the northern leg of the existing Skunk Hollow switching wye between the Bass Lake Spur and Oxford Street will be removed and replaced with a new “Southerly Connection” between the Bass Lake Spur and the MN&S Spur (see Question #13 for additional information on the Southerly Connection).
- Relatively minor adjustments to and reconstruction of the freight tracks east of Beltline Boulevard to west of Cedar Lake Parkway will be made.
- Existing freight tracks will be moved up to approximately 40 feet north, from north of Cedar Lake Parkway to south of Burnham Road (approximately 2,100 feet).
- The removal of approximately 13,600 feet of freight rail siding track along the Bass Lake Spur.

While these adjustments will change the geometry of the freight rail alignment for the movement of freight rail between the Bass Lake Spur and the MN&S Spur, they will not result in substantial long-term impacts to freight rail operations.

11. WHY IS FREIGHT RAIL IN THE KENILWORTH CORRIDOR INCLUDED AS AN EXISTING CONDITION FOR THE ANALYSIS COMPLETED FOR THE LRT PROJECT?

All analyses for the Final EIS were conducted using the current existing conditions or a “no-action alternative” (commonly referred to as the No Build Alternative) as the baseline from which to measure potential impacts (see *Forty Most Asked Questions Concerning CEQ’s NEPA Regulations* [Council on Environmental Quality, 1981]). The purpose of a baseline condition (or the No Build alternative) assessment under NEPA is to provide policymakers, agencies, and the public a benchmark against which to measure the environmental consequences of the proposed Project.

The Project’s No Build Alternative includes the existing freight rail service and facilities within the Kenilworth Corridor. This Project does not control the future disposition of existing freight rail operations within the Kenilworth Corridor. Freight rail service in the Kenilworth Corridor can only be terminated or vacated by the freight rail operators holding the trackage rights to operate in this segment—CP and TC&W. In addition, there are no public plans or policy documents stating the future removal of freight rail service in the Kenilworth Corridor. Freight rail has been in operation in the Kenilworth Corridor for nearly 20 years. Arbitrarily removing an existing condition from the No Build without any substantiation would introduce a faulty analysis framework. Freight rail operations within the Kenilworth Corridor are subject to many factors, including Surface Transportation Board regulations that govern freight rail commerce and local, regional, and national market forces that effect freight rail operations and facility development, both of which are outside of the scope of influence of the Project. The Project definition does not include freight rail operations in the Kenilworth Corridor as a condition of the Project, since freight rail operation is analyzed under the No Build baseline. Furthermore, the permanency of freight rail operations in the Kenilworth Corridor is outside the scope of this Project. The Project is making minor infrastructure modifications to freight rail for very limited areas, mainly to facilitate the movement of light rail transit.

12. HOW IS SAFETY BEING ADDRESSED WHERE FREIGHT RAIL AND LRT WILL BE CO-LOCATED DURING OPERATIONS AND CONSTRUCTION?

Safety where freight rail and light rail will be co-located adjacent to each other is being addressed in multiple ways, both during operations and during construction:

Operations. Between the proposed Shady Oak Station in Hopkins and the existing Target Field Station in Minneapolis, portions of the proposed light rail alignment will be located within a combination of three active existing freight rail lines and the light rail alignment will generally be located parallel to the existing freight railroad corridors (described and illustrated in Section 4.4.3).

The Council will implement the Project’s *Safety and Security Management Plan* (Council, 2014) and the *Metro Light Rail Transit Design Criteria* (Council, 2015), to provide and maintain safety and security during operation of the Project within the vicinity of existing freight rail service. The *Design Criteria*, which includes design standards and specifications to provide security and/or enhance safety, includes safeguards to prevent LRT operational derailments, including guardrails (i.e., a rail or other structure laid parallel with the running rails of the track to keep derailed wheels adjacent to the running rails). In addition, corridor protection barriers (commonly referred to as “crash walls”) will be placed between the freight rail and light rail tracks. Corridor protection barriers are thick walls placed between freight rail and light rail tracks where: (1) either light rail or freight rail will be elevated above the adjacent tracks, or (2) the clearance between the centerline of the light rail tracks and the centerline of the freight tracks will be less than 25 feet. In addition, where clearance between the centerline of the at-grade light rail tracks and the centerline of the at-grade freight tracks is less than 50 feet, intrusion detection for possible freight derailment will be installed, where appropriate.

Where the light rail alignment will be adjacent to a freight rail alignment, the light rail alignment will be primarily on segregated right-of-way. In accordance with the National Electric Safety Code, this right-of-way configuration allows for contact wire height above rails as low as 16 feet for normal operation, and lower where required to clear vertical obstructions. To maximize the separation between the light rail catenary and the freight corridor, a typical normal design contact wire height for the LRT is 18 feet 6 inches.

The Council's *Operations Emergency Management Plan* for light rail was developed to assist in identifying, responding to, and resolving emergency situations in an efficient, controlled, and coordinated manner for the Project. The Operations Emergency Management Plan establishes the response process and responsibilities for departments and staff within Metro Transit, as well as outside agencies, in the event of a rail emergency.

In addition, the Council maintains an emergency preparedness exercise plan, in compliance with the *Safety and Security Management Plan*. The emergency preparedness exercise plan identifies emergency preparedness exercises, which will be carried out by the LRT Fire Life Safety and Security Committee (FLSSC). In advance of operation of the Project, a number of drills will be planned, conducted, and documented in the emergency preparedness exercise plan. Emergency preparedness training exercises will be designed to address areas such as rail equipment familiarization, situational awareness, passenger evacuation, coordination of functions, communications, and hands-on instruction. The LRT FLSSC will coordinate training exercises with the Council and the freight railroad owners and operators, as appropriate. During normal revenue service, the LRT FLSSC will coordinate training exercises with the Council and freight rail operators, as appropriate, to evaluate emergency preparedness. The exact nature of emergency preparedness exercises will be developed in coordination with the LRT FLSSC prior to construction and could include one tabletop and one full-scale emergency preparedness exercise annually.

While the Project will provide for the continuation of freight rail operations within the Kenilworth Corridor with relatively minor adjustments to freight rail facilities and operations, freight rail operations, including oversight of freight rail cargo, is outside of the scope and Purpose of this Project and outside of the jurisdiction of the Council and FTA. Further TC&W, is a private freight rail operator with the legal right to transport freight within the Kenilworth Corridor, granted by a Trackage Rights Agreement executed in 1998. Regulation over the operations and related communications from TC&W to emergency responders are outside of the jurisdiction of the Council and FTA. Regulation of railroad safety is within the jurisdiction of the Federal Railroad Agency (FRA). Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division of FRA administers a safety program that oversees the movement of hazardous materials the Nation's rail transportation system, including shipments transported to and from international organizations. The US DOT announced its Final Rule to Strengthen Safe Transportation of Flammable Liquids by Rail. The final rule, developed by the Pipeline and Hazardous Materials Safety Administration (PHMSA) and FRA, in coordination with Canada, focuses on safety improvements that are designed to prevent accidents, mitigate consequences in the event of an accident, and support emergency response.

Construction. As part of the Project, construction activities will occur close to active freight rail corridors. The Council will develop and implement a freight rail operations coordination plan that will be based on, and coordinated with, the Project's construction documents. During the Project's construction, the Council will continue to work closely with the railways concerning railway coordination. The Council will adopt and use the safety and construction specifications and standards of the Class 1 Railways: CP and BNSF Railway for the Project when construction is adjacent to or on freight railways' rights-of-way, in addition to all applicable Occupational Safety and Health Administration construction and other safety regulations. The railways' safety and construction specifications and standards are very specific and rigorous in their intent and execution. In addition, contractors' personnel, project engineering staff, Metro Transit staff, and all other support staff working on or adjacent to the railways' rights-of-way will be required to have completed and possess valid FRA Rule 214 Roadway Worker Training Certification, e-RAILSAFE, and BNSF Contractor Orientation Training. Railway flaggers will be used to control freight train movements through construction limits. Qualified inspectors will be used to assess the operational safety condition of the right-of-way prior to the movement of a train through areas of railway trackage that may be disturbed by excavating and excavations, pile driving, crane lifts, and related activities that may affect the safety of the site and rail operations through the construction limits.

13. WILL THE REPLACEMENT OF THE SKUNK HOLLOW SWITCHING WYE PROVIDE FOR FREIGHT RAIL SERVICE THROUGH SOUTHERN AREAS OF THE CITY OF ST. LOUIS PARK?

As part of the proposed freight rail modifications in the Bass Lake Spur, the Project will sever the connection to and require the removal of the northern branch of the existing Skunk Hollow switching wye. The

switching wye currently allows for freight train movements between the Bass Lake Spur and the MN&S Spur. In addition, the southern branch of the existing switching wye provides access to a customer which is currently serviced by TC&W freight rail operations. The existing function of the northern branch of the Skunk Hollow switching wye will be replaced with the new “Southerly Connection,” which will allow TC&W trains continued access between the Bass Lake Spur eastbound to the southbound MN&S Spur and the reverse. The Project will not affect the southern branch of the Skunk Hollow switching wye and will not change access to the existing TC&W customer it serves.

The proposed Southerly Connection will not change access to existing freight rail markets nor will it open access to new freight rail markets. However, the elimination of the northern branch of the existing Skunk Hollow switching wye and replacement with a new Southerly Connection will likely improve freight rail travel times for switching movements between the Bass Lake Spur and the MN&S, resulting in operational efficiencies for freight rail operators. As a result of these operational efficiencies, the Project could contribute indirectly to increases in the frequency and/or length of freight trains traveling along the MN&S Spur to the south of the Southerly Connection, which could result in indirect impacts on the human environment. These potential changes in the frequency and/or length of trains as a result of the Southerly Connection are not included in the Final EIS analyses, as freight rail operations are outside of the jurisdiction of the FTA and the Council and because the information needed to evaluate related impacts to the human environment is unavailable and unobtainable in accordance with 40 CFR Part 1502.22 and Minnesota Statutes 4410.2500. See Section 4.4 of the Final EIS for more information.

14. WHAT ARE THE ENVIRONMENTAL IMPACTS TO THE GRAND ROUNDS HISTORIC DISTRICT AND THE KENILWORTH LAGOON?

The Grand Rounds Historic District (GRHD), which is approximately 52 miles in length, consists of a variety of parks, parkways, lakes, golf courses, waterfalls, planned and natural gardens, and creek and river views. There are ten contributing elements to the GRHD that are within the Project’s historic area of potential effect and were surveyed and evaluated as part of the process completed under Section 106 of the National Historic Preservation Act. Table ES-1 summarizes how the Project would affect those contributing elements of the GRHD and the GRHD itself. As noted in the table, there will be an adverse effect on the Kenilworth Lagoon as a result of the Project, and thus there will also be an adverse effect on the GRHD. Further, the other nine contributing elements of the GRHD will be affected by the Project, but that effect will not be adverse (based in part on implementation of avoidance measures specified in the Section 106 Memorandum of Agreement (MOA), which is included in Appendix H).

Table ES-1

Contributing Elements to the Grand Rounds Historic District

Property Name	Effect Finding
GRHD	Adverse Effect
Kenilworth Lagoon	Adverse Effect
Cedar Lake	No Adverse Effect
Cedar Lake Parkway	No Adverse Effect
Lake of the Isles	No Adverse Effect
Lake of the Isles Parkway	No Adverse Effect
Park Board Bridge No. 4 / Bridge L5729	No Adverse Effect
Kenwood Parkway	No Adverse Effect
Kenwood Park	No Adverse Effect
Lake Calhoun	No Adverse Effect
Kenwood Water Tower	No Adverse Effect

Source: *Section 106 Assessment of Effects for Historic Properties*; Council, 2015.

In summary, the Project will adversely affect the Kenilworth Lagoon and the GRHD in the following ways (see Section 3.5 and Appendix H for additional detail):

1. **Visual Character and Setting.** The Project will adversely affect the property's visual character and setting through the introduction of the new light rail bridge and reconstruction of the existing trail and freight rail bridges across the waterway and removal of vegetation along the banks of the waterway. In particular, there will be a reduction in the amount of light that reaches the lagoon where the new bridges will be located and the wider combined structure width across the lagoon will adversely affect the user's experience when traveling through the lagoon.
2. **Noise.** Without mitigation, the Project will result in noise from light rail operations that would result in a Moderate noise impact to portions of the Kenilworth Lagoon (as per FTA's noise guidelines).

Measures are specified in the Section 106 MOA to avoid, minimize, and mitigate effects to the GRHD and its contributing elements, including the Kenilworth Lagoon. Those measures include designing Project elements within and in the vicinity of the GRHD in accordance with the Secretary of Interior's (SOI) Standards, continuing consultation on the design of these elements with the Minnesota Historic Preservation Office (MnHPO) and other consulting parties, and the implementation of a Construction Protection Plan (CPP). Following is a list of specific mitigation measures specified in the Section 106 MOA that address the adverse effect on the Kenilworth Lagoon and the GRHD:

- Install a parapet wall and rail damper on the light rail bridge over the waterway to mitigate the moderate noise impact at the Kenilworth Lagoon.
- Rehabilitate/Reconstruct Works Progress Administration (WPA) Rustic Style Retaining walls to minimize and mitigate adverse effects.
- Design Project elements within and adjacent to the Grand Rounds Historic District in accordance with the Secretary of the Interior's (SOI's) *Standards for the Treatment of Historic Properties* (36 CFR Part 68), to be reviewed by the MnHPO and consulting parties, to further minimize adverse effects.
- Develop a Construction Protection Plan (CPP) detailing the measures to be implemented during Project construction to avoid adverse effects.
- Prepare guidance for future preservation activities within the portion of the GRHD: Canal System, including adjacent parkland, extending from the north end of Lake Calhoun to the east end of Cedar Lake, and including the entirety of the Lake of the Isles Park and Kenilworth Lagoon elements. The plans will be prepared in accordance with the following: the Secretary of the Interior's (SOI's) *Standards for the Treatment of Historic Properties* (36 CFR Part 68); the SOI's *Standards for Preservation Planning*; and the National Park System's *Guidelines for the Treatment of Cultural Landscapes*, and Preservation Briefs, and Preservation Tech Notes.

15. WHAT ARE THE ENVIRONMENTAL IMPACTS OF LRT IN THE KENILWORTH CORRIDOR?

Light rail construction in the Kenilworth Corridor has the potential to cause environmental impacts including disruptive noise levels and visual impacts (the construction of the new bridges will require noticeable clearing of trees and other vegetation). Potential temporary impacts during construction include temporary detours of trails and roadways, as well as reductions in vehicular access and parking affecting community cohesion, groundwater management impacts (collection, storage, and disposal), and vibration impacts resulting from the operation of heavy equipment (pile driving, hoe rams, vibratory compaction, and loaded trucks). There will be utility impacts as sewer and water mains, power, gas, and communication lines are relocated. It is reasonable to expect that previously undocumented soil or groundwater contamination may be encountered during construction. Short-term construction impacts to park uses and recreational activities include closures, detours, and temporary facilities built around obstructions. Impacts to identified architecture/history and archaeological properties from construction have been identified as part of the Section 106 process. As documented in the Project's Section 106 MOA (Appendix H), the Kenilworth Channel/Lagoon will be temporarily closed and detoured during construction. Best Management Practices (BMPs) will be developed and implemented during removal of the existing bridges and construction of the

new bridges across the Kenilworth Channel/Lagoon, which is both a Section 106 and Section 4(f) protected property (see Section 3.5 and Chapter 6 of the Final EIS for more information on the Project's Section 106 and Section 4(f) analyses and determinations). Table ES-2 summarizes the mitigation measures for each environmental and transportation category that will be implemented in the Kenilworth Corridor to address the operational and construction impacts (see the corresponding sections of Chapters 3 and 4 for a more detailed description of the mitigation measures).

Table ES-2

Summary of Mitigation Measures in the Kenilworth Corridor, by Environmental and Transportation Category^a

Environmental/Transportation Category	Mitigation Measure
3.1 Land Use; 3.3 Neighborhood and Community	<ul style="list-style-type: none"> Implement a Construction Mitigation Plan, which includes a construction staging plan and a Construction Communication Plan (components of the staging plan include traffic management plans and a construction timeline)
3.2 Economic Activity	<ul style="list-style-type: none"> When acquiring property from a property owner, pay damages if the value of the property is decreased in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
3.4 Acquisitions and Displacements	<ul style="list-style-type: none"> Compensate businesses or persons displaced from a property in accordance with provisions of the Uniform Relocation Act and MN Stat. 117. Provide relocation benefits under the provisions of the Uniform Relocation Act and MN Stat. 117.
3.5 Cultural Resources	<ul style="list-style-type: none"> Implement the agreed terms of the Section 106 Memorandum of Agreement
3.6 Parks and Recreation	<ul style="list-style-type: none"> Develop and implement a Construction Communication Plan that includes coordination with park owners, advance notice of construction activities, and highlight road, sidewalk, and trail closures, and detour routes Restore areas and features of parks and recreation areas altered or disturbed due to construction activities to original conditions or better in coordination with the jurisdictional owner
3.7 Visual Quality and Aesthetics	<ul style="list-style-type: none"> Follow design guidelines for key structures throughout the proposed light rail alignment found in the Council's <i>Visual Quality Guidelines for Key Structures</i> Design and implement landscaping into design at appropriate locations to address identified visual impacts, within available landscape budget and balancing other priorities for landscaping (e.g., surface water quality, habitat preservation, species of concern)
3.8 Geology and Groundwater	<ul style="list-style-type: none"> Prepare a groundwater management plan before construction to address collection, storage and disposal of surface water runoff and pumped groundwater following construction of the Project, and consider concerns about placement of stormwater handling facilities in or near wellhead protection areas. Include monitoring, which will be used to assess excessive groundwater infiltration and to prioritize any potential repairs to the waterproofing systems. Develop and implement a monitoring plan that provides means for detecting the settlement of buildings, roads, or parking areas Prepare a groundwater management plan that will include required groundwater monitoring and management practices during construction Seal and abandon all water or monitor wells or boreholes installed as part of soil and groundwater investigation
3.9 Surface Water Resources	<ul style="list-style-type: none"> Design stormwater management facilities to provide stormwater treatment in compliance with NPDES requirements
3.10 Ecosystems	<ul style="list-style-type: none"> Incorporate native landscaping into the Project's design, where applicable and appropriate Reseed and restore habitat that is temporarily disturbed during construction, where appropriate, upon construction completion
3.12 Noise	<ul style="list-style-type: none"> Employ BMPs to minimize noise project-wide, including use of wheel skirts (panels over the wheels) to reduce wheel/rail noise and continuously welded rail to eliminate gaps in the tracks that generate additional noise; conduct wheel truing to keep wheels smooth and round and rail grinding to remove corrugations; and apply lubrication if/where needed <ul style="list-style-type: none"> Locate noise generating elements (e.g., crossovers) away from sensitive locations, where possible Construct 2' high parapet wall and rail dampers across Kenilworth Channel Complete on-site testing to determine if residences meet interior noise level criteria: one residence at Burnham Road North located NW of the channel, three residences at Thomas Ave South Implement wayside bell at Thomas Avenue South, Sheridan Avenue South, and South Upton Avenue Prepare a detailed Noise Control Plan for the Project's construction duration

Environmental/Transportation Category	Mitigation Measure
3.13 Vibration	<ul style="list-style-type: none"> • Implement highly resilient rail fasteners in the tunnel section (2,200 feet) to eliminate ground-borne noise impacts (the fasteners should be designed to provide at least 5 dB of reduction in vibration levels at 80 Hz and higher) • Apply the following measures where feasible to minimize impacts from construction vibration: limit high-vibration activities at night; include limits on vibration in the construction specifications, especially at locations with high-vibration activities; minimize the use of impact and vibratory equipment, where feasible and appropriate; use truck haul routes that minimize exposure to sensitive receptors and minimize damage to surface roadways, where appropriate; perform pre-construction surveys to document the existing conditions of structures in the vicinity of sites where high-vibration construction activities will be performed; if a construction activity has the potential to exceed the damage criteria at a building, the contractor will be required to conduct vibration monitoring and, if the vibration exceeds the limit, the activity must be modified or terminated
3.14 Hazardous and Contaminated Materials	<ul style="list-style-type: none"> • Conduct mitigation within the Minnesota Pollution Control Agency (MPCA) Brownfield Program regulatory framework and approved RAPs • Implement Response Action Plans, approved by MPCA, to address the risks identified in the Phase I and Phase II environmental site assessments • Prior to the start of construction prepare, and with MPCA approval, a Construction Contingency Plan to address the discovery of unknown contamination • Survey structures on acquired land for the presence of hazardous/regulated materials prior to their demolition or modification • Handle and manage potentially hazardous materials in compliance with applicable regulatory standards and dispose of in accordance with Hazardous Materials Abatement Plans for in-place hazardous/regulated materials, and the Response Action Plan/Construction Contingency Plan for hazardous/regulated materials in the site soils
4.1 Transit	<ul style="list-style-type: none"> • Follow Federal and local procedures for route modifications or the suspension of transit service, including completing a Title VI analysis and outreach plan to determine how service changes would affect low-income and minority communities and communicate these changes prior to implementation • Implement a Construction Mitigation Plan, which includes a construction staging plan and a Construction Communication Plan (see 3.1)
4.2 Roadways and Traffic	<ul style="list-style-type: none"> • Comply with applicable state and local regulations related to the roadway closures and the effects of construction activities, including Minnesota Department of Transportation • Contractor compliance with all guidelines established in the Minnesota Manual on Uniform Traffic Control Devices (2015) • Appropriate jurisdiction (Minneapolis) to review construction staging and mitigation documents • Secure required permits • Implement a Construction Mitigation Plan, Construction Communication Plan, and construction staging plan (see 3.1)
4.4 Freight	<ul style="list-style-type: none"> • Develop and implement freight rail operation coordination plans <ul style="list-style-type: none"> – Provide provisions in the construction contract to identify how the contractor will interact with the railroads – Work with affected freight rail owners and operators to sequence construction to minimize effects on freight movements and to identify optimal periods for closing the rail service (including dates and times for stoppages) and reducing speeds • Use flaggers to allow freight rail operations to continue
4.5 Pedestrian and Bicycle	<ul style="list-style-type: none"> • Implement a Construction Mitigation Plan, Construction Communication Plan, and construction staging plan (see 3.1)
4.6 Safety and Security	<ul style="list-style-type: none"> • Implement a Construction Mitigation Plan, Construction Communication Plan, and construction staging plan (see 3.1)

^a Mitigation measures for the following environmental categories are not included in the Kenilworth Corridor: Electromagnetic Fields/Electromagnetic Interference (EMF/EMI), energy, and parking.

16. DOES THE PROJECT AFFECT ANY HISTORIC PROPERTIES? IF SO, HOW WILL THE PROJECT MINIMIZE AND MITIGATE THE AFFECTS TO THE HISTORIC PROPERTIES?

FTA has determined that the Project will have No Adverse Effect on 26 historic properties and an Adverse Effect on five historic properties. Due to the Project's adverse effect on these five properties—two archaeological sites (Sites 21HE0436 and 21HE0437)⁴; the Grand Rounds Historic District; the Kenilworth Lagoon as a contributing property to the Grand Rounds Historic District; and the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot—FTA has determined that the undertaking will have an Adverse Effect on historic properties. See Section 3.5.4 and Appendix H of the Final EIS for additional information regarding the Project's impacts on cultural resources.

The Project's measures to resolve adverse effects, including avoidance, minimization, and mitigation measures, are specified in the Project's Section 106 MOA (see Appendix H). Following is a summary of the measures specific in the Section 106 MOA that are applicable to the five adversely affected properties.

• *Architecture/History Properties*

- Install a parapet wall and rail damper on LRT bridge over waterway to mitigate the moderate noise impact at the Kenilworth Lagoon (see Section 3.12)
- Rehabilitate/Reconstruct Works Progress Administration Rustic Style Retaining Walls to minimize and mitigate the direct physical and indirect visual adverse effects on the Grand Rounds Historic District, including the Kenilworth Lagoon
- Design Project elements within and adjacent to the Grand Rounds Historic District in accordance with the SOI's Standards (36 CRF 68), to be reviewed by the MnHPO and consulting parties, to further minimize the direct physical and indirect visual adverse effects
- Develop a Construction Protection Plan detailing measures to be implemented during Project construction to avoid direct physical and indirect adverse effects
- Prepare guidance for future preservation activities within the portion of the Grand Rounds Historic District: Canal System, including adjacent parkland, extending from the north end of Lake Calhoun to the east end of Cedar Lake, and including the entirety of the Lake of the Isles Park and Kenilworth Lagoon elements to mitigate the direct physical and indirect visual adverse effects to the Grand Rounds Historic District
- Revised the Project design to relocate the crossover location near the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot 3,420 feet west along the alignment to allow the noise wall to shift at least 240 feet west, and avoid adverse visual effect
- Revised the Project design to relocate the signal bungalow near the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot to the alternate crossover location to further avoid adverse visual effects (complete)

• *Archaeological Resources*

- Conduct a Phase III Archaeological Data Recovery of Sites 21HE0436 and 21HE0437
- Incorporate into the design of the Royalston Station interpretation of the sites, based on the results of the Phase II investigations and allowing for the incorporation of any additional information from the Phase III data recovery
- Develop an interpretative plan for the interpretation in conformance with the Standards and Practices for Interpretive Planning from the National Association for Interpretation and Creating Outdoor Trail Signage technical leaflets

⁴ These archaeological properties are considered sensitive historic resources under Section 304 of the NHPA, as amended. In accordance with Section 304, information on these sensitive historic resources may cause a significant invasion of privacy and/or put the resources at risk to harm and is not included in this document. Names, locations, and areas of significance of archaeological sites are not disclosed to help preserve these sensitive resources.

17. WILL THE PROJECT USE ANY SECTION 4(f) PROPERTIES? IF SO, HOW WILL THE PROJECT MINIMIZE HARM TO THOSE PROPERTIES?

The Project will result in a non-*de minimis* use of the Kenilworth Lagoon/Grand Rounds Historic District historic Section 4(f) property and there is no feasible and prudent alternative that would avoid a use of this historic resource. In addition, FTA has determined in accordance with 23 CFR Part 774.17 that all possible planning to minimize harm has been conducted and implemented through the completion of the project's Section 106 process and through the anticipated execution of the Section 106 Memorandum of Agreement (see Appendix H). Further, FTA and the Council have determined that the Project is the alternative that would result in the least overall harm to the Kenilworth Lagoon/Grand Rounds Historic District. Table ES-3 includes FTA's final Section 4(f) use determinations for the Southwest LRT Project LPA.

TABLE ES-3

Summary of Section 4(f) Property Uses^a

Section 4(f) Property	Property Type	Official with Jurisdiction	Non- <i>de minimis</i> Use	<i>De minimis</i> Impact	Temporary Occupancy: No Use
Purgatory Creek Park	Park	City of Eden Prairie			•
Unnamed Open Space B	Park	City of Minnetonka		•	
Opus Development Area Trail Network	Park	City of Minnetonka		•	
Minikahda Club	Historic	MnHPO			•
Cedar Lake Parkway/Grand Rounds Historic District ^b	Historic	MnHPO			•
Kenilworth Lagoon/Grand Rounds Historic District ^c	Historic	MnHPO	•		
Kenilworth Channel/Lagoon (as an element of the Minneapolis Chain of Lakes Regional Park)	Park	MPRB		•	
Cedar Lake Park	Park	MPRB			•
Bryn Mawr Meadows Park	Park	MPRB		•	
St. Paul, Minneapolis & Manitoba Railroad Historic District	Historic	MnHPO		•	

^a See Chapter 6 of the Final EIS for definitions of the potential types of Section 4(f) uses.

^b Cedar Lake Parkway is a contributing element of Grand Rounds Historic District. FTA has made a Section 106 determination of no adverse effect to Cedar Lake Parkway.

^c Kenilworth Lagoon is a contributing element of Grand Rounds Historic District. FTA has made a Section 106 determination of adverse effect to Kenilworth Lagoon historic property and Grand Rounds Historic District.

Note: MnHPO = Minnesota Historic Preservation Office; MPRB = Minneapolis Park and Recreation Board.

FTA and the Council have made efforts to help avoid, minimize, and mitigate impacts to all Section 4(f) properties in the Project study area, including participation in various Section 4(f) coordination meetings throughout the process (see Appendix I for the notes and materials from these meetings). All of the Section 4(f) determinations noted in Table ES-2 were concurred upon in writing by the applicable officials with jurisdiction after consideration of measures to minimize harm. A summary of the measures to minimize harm associated with each of the affected Section 4(f) properties includes coordination with local cities and agencies during construction to help avoid and minimize effects on recreational activities, detour routes that will provide continued bicycle and pedestrian access to and from the park resources, and properties that will be maintained in their current condition or better.

18. WHAT NOISE AND VIBRATION IMPACTS WERE IDENTIFIED AND HOW WILL THEY BE MITIGATED?

The FTA guidance manual, *Transit Noise and Vibration Impact Assessment* (FTA, 2006), is the primary source for the Project's noise assessment methodology and on transit projects throughout the country. The Final EIS used FTA's Detailed Noise Analysis methodology, which is summarized in Section 3.12, included the following steps:

- Identify noise-sensitive land uses in the corridor using aerial photography, GIS data and field surveys, typically within 300 feet of the alignment.
- Measure existing noise levels in the corridor near sensitive receptors, including all sources of noise in the area.
- Forecast future Project noise levels from transit operations, using Project preliminary engineering plans and information on speeds, headways, track type, vehicle type, and grade-crossing operations. The Project noise level assessment included light rail operations, horns, and bells at grade crossings and stations, associated roadway improvements, and changes and feeder bus operations at select stations. Details regarding the information used to predict future Project noise levels can be found in Appendix K of the Final EIS.
- Assess the impact of the Project by comparing the projected future noise levels with existing noise levels using the FTA noise impact criteria.
- Identify mitigation at locations where projected future noise levels exceed the FTA impact criteria.

Consistent with the FTA guidance, the existing noise measurements taken for the Project, and included in the Draft EIS, Supplemental Draft EIS and Final EIS, include existing noise from freight trains operating in the Kenilworth Corridor. Those noise measurements were used to establish the existing noise levels for the respective analyses. The projected noise impacts from the Project also reflect freight rail trains and the proposed light rail trains in the locations where they will be located. For example, if the Project will move the location of existing freight rail tracks, the noise impact analysis for the Project will reflect the proposed new location of the freight rail tracks. Information regarding the existing noise measurements is contained in Appendix K of the Final EIS, including a memorandum describing the inclusion of freight rail in the Draft EIS noise analysis.

The analysis of long-term direct and indirect noise impacts found that, without mitigation, there would be 237 dwelling units where moderate noise impacts would occur and 558 dwelling units where the noise impacts would be severe. A majority of the noise impacts without mitigation would be related to light rail vehicle horn soundings at at-grade crossings in the corridor. However, the Project will implement mitigation measures to avoid and minimize noise impacts. Overall, the majority of the noise impacts from the Project will be eliminated through the use of mitigation measures, such as noise walls, rail quiet zones, or wayside bells. After mitigation, there will be moderate residual noise impacts⁵ on 59 dwelling units at four locations.

The vibration assessment included the following steps:

- Identify vibration-sensitive land uses in the corridor using aerial photography, GIS data, and field surveys, typically within 300 feet of the alignment.
- Measure vibration-propagation characteristics of the soil in the corridor at sensitive receptors.
- Projected Project vibration levels from transit operations, using Project engineering plans and information on speeds, headways, track type, and vehicle vibration characteristics.
- Assess the impact from transit by comparing the project vibration with the FTA vibration impact criteria in Chapter 8 of the FTA guidance manual (FTA, 2006).
- Identify mitigation measures at locations where project vibration levels exceed the impact criteria.

⁵ These residual Moderate noise impacts do not warrant mitigation under the Council's noise guidelines included in the Regional Transitway Guidelines. See Section 3.12 of the Final EIS for additional information.

The Project will not result in vibration impacts for any residential or institutional land uses. The Project would, however, result in 54 ground-borne noise impacts for residential land uses without mitigation. These impacts would be directly adjacent to and south of the proposed light rail tunnel in the Kenilworth Corridor. The Council will use highly resilient rail fasteners in the proposed light rail tunnel as mitigation, which will eliminate the ground-borne noise impacts for residential land uses.

A general assessment of freight vibration was also conducted where the freight tracks will be shifted closer to sensitive receptors to provide room for the LRT tracks in portions of the Kenilworth Corridor. The results of the assessment indicated that there would be no vibration impacts from freight trains due to the shift in freight tracks, due primarily to the low speeds of the freight trains. More information regarding the freight vibration assessment can be found in Appendix K.

19. WILL WETLANDS BE DISPLACED BY THE PROJECT? IF SO, HOW WILL THEY BE MITIGATED?

Wetlands are regulated at the federal level by the U.S. Environmental Protection Agency and the USACE under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbor Act. The USACE is responsible for issuing a permit for the placement of dredged or fill material into any waters that are regulated by the CWA and/or the Rivers and Harbor Act. Wetlands are also regulated at the state level by the Minnesota Department of Natural Resources under MN Rule 6115 and by the Minnesota Board of Water and Soil Resources under the Minnesota Wetland Conservation Act (WCA). Designated Local Government Units are responsible for making regulatory decisions regarding impacts to wetlands that are regulated by the WCA. In addition, some local jurisdictions maintain ordinances that incorporate additional wetland requirements beyond those specified in the WCA.

Implementation of the Project will have long-term and short-term impacts on wetlands. In summary, these impacts include 4.70 acres of long-term impacts on WCA-regulated wetlands and 1.83 acres on CWA-regulated wetlands (20 wetlands, 10 of which are regulated by both the WCA and CWA, three of which are regulated only by the WCA and seven of which are regulated only by the CWA); and 3.83 acres of short-term impacts on WCA-regulated wetlands and 7.53 acres on CWA-regulated wetlands (18 wetlands, 13 of which are regulated by both the WCA and CWA and five of which are regulated only by the CWA). Table ES-3 summarizes the potential long-term and short-term impacts of the Project on wetlands. Wetlands affected by the Project would be mitigated as follows:

- The Council will purchase the wetland mitigation bank credits required under the forthcoming WCA and CWA Section 404 permits. Wetland mitigation banks credits will be purchased from established and approved wetland bank accounts located in major watershed 33 (Minnesota River-Shakopee)/USACE bank service area 9, in accordance with the applicable USACE, WCA, and Local Government Unit siting priority requirements, prior to the construction of the Project.
- Wetland areas affected on a temporary basis during construction will be restored as required by WCA and CWA permits. The Project will purchase wetland mitigation bank credits for CWA regulated short-term impacts lasting longer than 180 days.

20. WHAT ARE THE ENVIRONMENTAL EFFECTS OF THE PROJECT AND HOW WILL THEY BE MITIGATED?

Table ES-4 summarizes the potential long-term and short-term impacts of the Project and mitigation measures. These anticipated impacts include direct, indirect, and cumulative impacts. Refer to chapters 3 and 4 of the Final EIS for additional information on impacts and mitigation measures.

TABLE ES-4

Summary of Impacts, Commitments, and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Environmental Categories ^a		
3.1 Land Use	Long-term Direct Impacts	<ul style="list-style-type: none"> • Direct conversion of approximately 144 acres of privately owned industrial, commercial, and residential land, publicly and privately owned parks and open space, publicly owned rights-of-way (i.e., HCRRA), and privately owned railroad rights-of-way (i.e., Canadian Pacific Railway and BNSF Railway) to public transportation-related use (refer to Table 3.1-5 for more information) • No adverse impacts due to no changes in overall land use characteristics within the vicinity of the Project
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Potential increased intensity and/or advanced timing of development surrounding proposed light rail station areas • No adverse impacts
	Short-term Impacts	<ul style="list-style-type: none"> • Temporary changes to property access during construction or temporary conversion of land to a transportation use for construction staging and other construction activities • Temporary easements on 134 acres effecting 178 parcels of land that include industrial, commercial, railroad, residential, and public land uses
	Commitments	None
	Mitigation Measures	<p>Short-term:</p> <ul style="list-style-type: none"> • Develop and implement a Construction Mitigation Plan and a Construction Communication Plan that will address short-term impacts to land use related to temporary construction easements and other construction activities; strategies may include: <ul style="list-style-type: none"> – Issue construction updates and post them on the Project website – Provide advance notice of roadway closures, driveway closures and utility shutoffs – Conduct public meetings – Establish a 24-hour construction hotline – Prepare materials with information about construction – Address property access issues – Assign staff to serve as liaisons between the public and contractors during construction • Develop and implement a construction staging plan, which will be reviewed with the appropriate jurisdictions and railroads. Components of the staging plan include traffic management plans and a construction timeline.
3.2 Economic Activity	Long-term Direct Impacts	<p>Employment:</p> <ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – \$34.5 million (2015 dollars) in local annual wages and salaries, resulting in 172 long-term jobs in the local economy • No adverse impacts to regional employment due to the projected increase in transit workers <p>Property Tax Revenue:</p> <ul style="list-style-type: none"> • Permanent removal of acquired private parcels from the property tax base of affected cities and corresponding reduction in property tax revenue from those parcels <p>Existing Business and Development/Redevelopment:</p> <ul style="list-style-type: none"> • Changes in local traffic patterns and the number of available off-street and on-street parking spots, resulting in a loss of overall parking for some businesses and a related loss in revenue • Removal of land acquired by the Project from the inventory of available land for potential development/redevelopment <p>Freight Rail Owners and Operators:</p> <ul style="list-style-type: none"> • No adverse impacts to freight rail owners and operators based on modifications by the Project

Category		Summary of Impacts and Mitigations
	Long-term Indirect Impacts	<p>Employment:</p> <ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – Potential creation of new jobs as employees gain easier access to businesses, residential housing units, and other facilities, providing a net benefit to the local economy • No adverse impacts due to new jobs created in the region as employees gain easier access to businesses <p>Property Tax Revenue:</p> <ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – Potential increase in property tax revenue for local jurisdictions related to increases in development/redevelopment • No adverse impacts to property tax revenue due to the transit oriented development potential surrounding the stations <p>Existing Business and Development/Redevelopment:</p> <ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – Likely increased property values in areas surrounding proposed light rail stations – Likely increase in development/redevelopment in the areas surrounding light rail stations • Potential impacts that could reduce value of an area (“nuisance effects”) • No adverse effects to existing business and development/redevelopment due to improved accessibility which expand workforce and retail access
	Short-term Impacts	<p>Employment:</p> <ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – Construction spending associated with the Project will result in an estimated \$1.3 billion in overall economic activity (year-of-expenditure dollars) over the construction period • Potential lost revenues for businesses due to temporary reduction of parking stalls, traffic congestion, reduced access, and increased noise, dust, and perceived changes in visual quality <p>Property Tax Revenue:</p> <ul style="list-style-type: none"> • No adverse impacts because the temporary occupancies and easements are not expected to result in displacement of businesses or residents <p>Existing Businesses:</p> <ul style="list-style-type: none"> • Potential increases in noise levels, dust, traffic congestion, visual changes, and increased difficulty accessing property for existing businesses <p>Freight Rail Owners and Operators:</p> <ul style="list-style-type: none"> • Slower freight rail operations during construction may occur and short periods of freight stoppage required to make some modifications to the freight rail track
	Commitments	<p>Long-Term:</p> <ul style="list-style-type: none"> • Pursue with the City of St. Louis Park the joint development opportunity at the proposed Beltline Station that could increase property tax revenues • Coordinate changes to freight rail tracks, sidings, or other facilities with the freight railroad owner and operator • Onsite flaggers to manage freight rail traffic during construction
	Mitigation Measures	<p>Long-Term:</p> <p>Existing Businesses and Development/Redevelopment Effects</p> <ul style="list-style-type: none"> • When acquiring property from a property owner, pay damages if the value of the property is decreased in accordance with the Uniform Act <p>Short-term:</p> <p>Existing Businesses and Development/Redevelopment Effects</p> <ul style="list-style-type: none"> • Develop and implement a Construction Mitigation Plan, Construction Communication Plan and construction staging plan (see 3.1)

Category		Summary of Impacts and Mitigations
		<p>Freight Rail Owners and Operators:</p> <ul style="list-style-type: none"> • Develop and implement freight rail operation coordination plans to mitigate short-term impacts to freight rail operations related to construction activities • Work with affected freight rail owners and operators to provide provisions in the construction contract to identify how the contractor will interact with the railroads • Work with affected freight rail owners and operators to sequence construction to minimize effects on freight movements and to identify optimal periods for closing the rail service and reducing speeds • Determine dates and times for all stoppages through coordination with the railroad owners and operators
3.3 Neighborhood and Community	Long-term Direct Impacts	<p>Access to Community Facilities:</p> <ul style="list-style-type: none"> • Some roadway modifications within the general vicinity of community facilities, but access to these facilities will be maintained and the Project will provide improve transit access to these facilities • No adverse impacts <p>Community Character:</p> <ul style="list-style-type: none"> • Some changes in noise/vibration and visual character adjacent to the Project and some property acquisition, but these changes will be confined to limited areas • No adverse impacts <p>Community Cohesion:</p> <ul style="list-style-type: none"> • Some changes in the local roadway, pedestrian, and bicycle networks will occur, but existing roadway and sidewalk/trail connectivity and access will be maintained or improved • No adverse impacts
	Long-Term Indirect Impacts	<ul style="list-style-type: none"> • Potential property conversion surrounding proposed station areas, including private and public development and/or redevelopment that could affect supply of and demand for off-street and on-street parking around station areas • No adverse impacts on community facilities, community character, or community cohesion
	Short-Term Impacts	<p>Access to Community Facilities:</p> <ul style="list-style-type: none"> • Temporary changes to roadways, including intersections modifications, and trail and sidewalk detours for routes which provide access to community facilities <p>Community Character:</p> <ul style="list-style-type: none"> • Construction impacts, such as increased levels of noise, vibration, and dust, may temporarily affect neighborhood character at times of heavy construction • Presence of large construction equipment may be perceived as visually disruptive <p>Community Cohesion</p> <ul style="list-style-type: none"> • Potential increases in noise levels, dust, and traffic congestion, including increased automobile and truck traffic through residential neighborhoods
	Commitments	None
	Mitigation Measures	<p>Short-term:</p> <ul style="list-style-type: none"> • Develop and implement the Construction Mitigation Plan, Construction Communication Plan and construction staging plan (see 3.1)
3.4 Acquisitions and Displacements	Long-term Direct Impacts	<ul style="list-style-type: none"> • Partial acquisition of 159 parcels (totaling 133.5 acres) and full acquisition of 36 parcels (totaling 64 acres) • Relocation of up to 72 businesses that currently operate on or use 20 of the parcels to be acquired
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Potential for increased development and redevelopment in areas surrounding station areas that could indirectly lead to acquisitions and displacements
	Short-term Impacts	<ul style="list-style-type: none"> • Temporary easements on 134 acres effecting 178 parcels of land that include industrial, commercial, railroad, residential, and public land uses

Category		Summary of Impacts and Mitigations
3.5 Cultural Resources	Commitments	None
	Mitigation Measures	<p>Long-term and Short-term:</p> <ul style="list-style-type: none"> • Compensate businesses or persons displaced from a property in accordance with provisions of the Uniform Act and MN Stat. 117. Provide relocation benefits under the provisions of the Uniform Act and Mn Stat. 117.
	Adverse Effects	<ul style="list-style-type: none"> • Adverse effect on the Kenilworth Lagoon and the Grand Rounds Historic District, of which the Kenilworth Lagoon is a contributing element • Adverse effect on the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot (Avoided with measures incorporated into the Project's design and Section 106 MOA) • Adverse effect at two archaeological sites, 21HE0436 and 21HE0437, both of which will be destroyed during the construction of the Project (the term "destroyed" is used in applying 36 CFR 800.5 and the Secretary of the Interior's Standards [36 CFR 68])
	Commitments	<ul style="list-style-type: none"> • Explored alternative locations for Project elements where adverse effects occur to archaeological resources • Implement Section 106 Memorandum of Agreement measures to avoid/minimize adverse effects
	Mitigation Measures	<ul style="list-style-type: none"> • Implement a Section 106 MOA that will include the following mitigation measures: <ul style="list-style-type: none"> - Architecture/History Properties <ul style="list-style-type: none"> ○ Install a parapet wall and rail damper on LRT bridge over waterway to mitigate the moderate noise impact at the Kenilworth Lagoon (see Section 3.12) ○ Rehabilitate/Reconstruct Works Progress Administration Rustic Style Retaining Walls to minimize and mitigate the direct physical and indirect visual adverse effects on the Grand Rounds Historic District, including the Kenilworth Lagoon ○ Design Project elements within and adjacent to the Grand Rounds Historic District in accordance with the <i>SOI's Standards (36 CFR 68)</i>, to be reviewed by the MnHPO and consulting parties, to further minimize the direct physical and indirect visual adverse effects ○ Develop a Construction Protection Plan detailing measures to be implemented during Project construction to avoid direct physical and indirect adverse effects ○ Prepare guidance for future preservation activities within the portion of the Grand Rounds Historic District: Canal System, including adjacent parkland, extending from the north end of Lake Calhoun to the east end of Cedar Lake, and including the entirety of the Lake of the Isles Park and Kenilworth Lagoon elements to mitigate the direct physical and indirect visual adverse effects to the Grand Rounds Historic District ○ Revised the Project design to relocate the crossover location near the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot 3,420 feet west along the alignment to allow the noise wall to shift at least 240 feet west, and avoid adverse visual effect ○ Revised the Project design to relocate the signal bungalow near the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot to the alternate crossover location to further avoid adverse visual effects (complete) - Archaeological Resources <ul style="list-style-type: none"> ○ Conduct a Phase III Archaeological Data Recovery of Sites 21HE0436 and 21HE0437 ○ Incorporate into the design of the Royalston Station interpretation of the sites, based on the results of the Phase II investigations and allowing for the incorporation of any additional information from the Phase III data recovery ○ Develop an interpretative plan for the interpretation in conformance with the Standards and Practices for Interpretive Planning from the National Association for Interpretation and Creating Outdoor Trail Signage technical leaflets
3.6 Parks and Recreation	Long-term Direct Impacts	<p>The following parks, recreation areas, and open space properties will incur long-term direct impacts as a result of the Project:</p> <ul style="list-style-type: none"> • Unnamed Open Space A: Acquisition of entire 2.95-acre open space parcel to accommodate installation of LRT tracks and station platform; trail realignment • Unnamed Open Space B: Acquisition of 2.5 acres to accommodate installation of LRT tracks; trail realignment • Kenilworth Channel/Lagoon: LRT improvements and modifications to the freight rail and trail alignments will occur on approximately 0.3 acre • Cedar Lake Park: New segment of sidewalk to be constructed within the park near East Cedar Beach; realignment of a portion of North Cedar Lake Regional Trail in park

Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> Bryn Mawr Meadows Park: Acquisition of 0.4-acre permanent maintenance easement to accommodate replacement trail bridge; modification of trail alignments in the park
	Long-term Indirect Impacts	<p>The following parks, recreation areas, and open spaces will incur long-term indirect impacts as a result of the Project:</p> <ul style="list-style-type: none"> Purgatory Creek Park: Changes to visual setting due to installation of elevated LRT line adjacent to park Nine Mile Creek Conservation Area: Changes to visual setting due to installation of LRT line adjacent to the property Overpass Skate Park: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Edgebrook Park: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Minnehaha Creek Open Space: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Edgebrook Park: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Jorvig Park: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Lilac Park: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Park Siding Park: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Kenilworth Channel/Lagoon: Changes to visual setting and noise conditions due to installation of LRT line across the channel Bryn Mawr Meadows Park: Modification to the park's visual setting due to the replacement trail bridge; improved transit and trail access
	Short-term Impacts	<p>The following parks, recreation areas, and open spaces will incur short-term impacts as a result of the Project:</p> <ul style="list-style-type: none"> Purgatory Creek Park: Acquisition of temporary construction easement; temporary changes to access, noise, and visual setting conditions during construction Nine Mile Creek Conservation Area: Temporary changes to visual setting and noise conditions during construction; potential for construction activities within the parcel Overpass Skate Park: Temporary changes to visual setting and noise conditions during construction Minnehaha Creek Open Space: Temporary changes to visual setting and noise conditions during construction Edgebrook Park: Temporary changes to visual setting and noise conditions during construction Jorvig Park: Temporary changes to visual setting and noise conditions during construction Lilac Park: Temporary changes to visual setting and noise conditions during construction Park Siding Park: Temporary changes to visual setting and noise conditions during construction Kenilworth Channel/Lagoon: Temporary closure of channel/user detour during construction; temporary changes to access, visual setting and noise conditions during construction Cedar Lake Park: Acquisition of temporary construction easement to accommodate trail reconstruction within the park Bryn Mawr Meadows Park: Acquisition of temporary construction easement and temporary Project activities within the park related to construction of replacement bridge and realignment of trails
	Commitments	<p>Long-term:</p> <ul style="list-style-type: none"> Kenilworth Channel/Lagoon: Conclude consultation on the design of the proposed bridges prior to construction Bryn Mawr Meadows Park: <ul style="list-style-type: none"> Continue consultation with MPRB to determine realignment of trails within the park prior to construction Conclude consultation with the MPRB on the design of the proposed new bridge prior to construction <p>Short-term:</p> <ul style="list-style-type: none"> Kenilworth Channel/Lagoon: Develop BMPs to be implemented during removal of the existing bridges and construction of the new bridges Bryn Mawr Meadows Park: Maintain connectivity with temporary trails during construction
	Mitigation Measures	<p>Long-term:</p> <ul style="list-style-type: none"> When permanently acquiring property at Bryn Mawr Meadows Park and two open spaces in Minnetonka, provide property owners with compensation in accordance with the Uniform Act

Category		Summary of Impacts and Mitigations
3.7 Visual Quality and Aesthetics		<p>Short-term:</p> <ul style="list-style-type: none"> When acquiring property for temporary construction purposes (i.e., temporary easement) at Purgatory Creek Park, Cedar Lake Park, and Bryn Mawr Meadows Park, provide property owners with compensation in accordance with the Uniform Act. Continue efforts to avoid, minimize, and mitigate impacts to Purgatory Creek Park, Nine Mile Creek Conservation Area, two unnamed open spaces in Minnetonka, Overpass Skate Park, Minnehaha Creek Open Space, Edgebrook Park, Jorvig Park, Park Siding Park, Kenilworth Channel/Lagoon, and Bryn Mawr Meadows Park; and develop a Construction Communication Plan that includes coordination with park owners, advance notice of construction activities, and highlight road, sidewalk, and trail closures, and detour routes Restore areas and features of parks and recreation areas altered or disturbed due to construction activities to original conditions or better in coordination with the jurisdictional owner
	Long-term Direct Impacts	<ul style="list-style-type: none"> Six views with a substantial level of visual quality impact, six views with a moderate level of visual quality impact^b
	Long-term Indirect Impacts	<ul style="list-style-type: none"> Potential for the built environment to appear more intensively developed and more urbanized in character due to the potential opportunities for new development, including higher residential densities and, in some cases, new or expanded commercial activities
	Short-term Impacts	<ul style="list-style-type: none"> Temporary impacts in portions of all visual analysis units^b associated with: construction staging areas; concrete and form installation; lights and glare from construction areas; and dust and debris
	Commitments	<ul style="list-style-type: none"> Designed stations to have a minimal impact on the surrounding environs. Each of the stations has been designed to be compatible or attractive additions to the surrounding community. Screen or landscape power stations located in areas of moderate or high visual sensitivity, to be compatible with the surrounding neighborhood character
	Mitigation Measures	<p>Long-term:</p> <ul style="list-style-type: none"> Follow design guidelines for key structures throughout the proposed light rail alignment found in the Council's <i>Visual Quality Guidelines for Key Structures</i> Follow exceptions to design guidelines where context sensitive designs have and will be prepared including the proposed light rail structures over Highway 212, I-394, and Highway 100, as well as individual retaining wall and bridge designs at 5th Avenue South and 7th Avenue South, in Hopkins Design and implement landscaping into design at appropriate locations to address identified visual impacts, within available landscape budget and balancing other priorities for landscaping (e.g., surface water quality, habitat preservation, species of concern), which could include the following: <ul style="list-style-type: none"> Retain as much existing vegetation as appropriate to provide shielding for sensitive viewpoints, including techniques such as chaining and mowing without removal of the root systems, and/or tying back large shrubs and trees to provide adequate areas for construction activities Restore and replant cleared areas in a timely manner, where appropriate, considering such factors as species type, seasonal growing conditions, and other construction-related activities Place new and replacement trees based on such factors such as helping to provide the maximum screening of views to and from sensitive viewpoints (e.g., adjacent residential areas) or providing street ornamentation, where appropriate Develop landscape plans for areas adjacent to elevated structures, retaining walls, noise walls, and TPSS sites^c to achieve such effects as providing partial screening from sensitive viewpoints Incorporate visual mitigation measures for Section 106-protected resources and Section 4(f)-protected properties as specified in Section 106 Memorandum of Agreement and Final Section 4(f) Evaluation, respectively <p>Short-term:</p> <ul style="list-style-type: none"> Follow the Council's design guidelines, to address construction impacts where appropriate and practical; these include: <ul style="list-style-type: none"> Locate staging areas in places where their visibility will be minimal and, to the extent required, provide temporary visual screening to limit views into them from nearby residential areas, trails, streets, or other places from which they will be seen by visually sensitive viewers

Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> - Use construction methods that minimize the need to remove vegetation to accommodate construction activities - Minimize and shielding lighting needed for staging areas or for nighttime construction activities • Restore areas disturbed during construction
3.8 Geology and Groundwater	Long-term Direct Impacts	<p>Geology:</p> <ul style="list-style-type: none"> • Potential for uneven ground settlement and bearing failure of the building foundations for the light rail alignment, stations, structures, and surface parking lots/parking structures • Cuts and fills to accommodate appropriate light rail track grade, including two light rail tunnels • No adverse impacts <p>Groundwater:</p> <ul style="list-style-type: none"> • Water collected at the tunnel portals will be routed through a pretreatment system that captures debris and sediments and through an underground infiltration chamber • Water from internal tunnel will be treated, if required, and pumped to the adjacent sanitary sewer systems owned by either the City of Minneapolis or Metropolitan Council Environmental Services
	Long-term Indirect Impacts	<p>Geology:</p> <ul style="list-style-type: none"> • No adverse impacts due to the existing disturbed soils underlying these areas <p>Groundwater:</p> <ul style="list-style-type: none"> • Impacts may occur as development activities in the Project's vicinity increase, but those development activities will be held to applicable regulatory standards and requirements
	Short-term Impacts	<p>Geology:</p> <ul style="list-style-type: none"> • At- or above-grade construction activities will expose sub-soil when topsoil is removed, which will be susceptible to surface-water and wind erosion <p>Groundwater:</p> <ul style="list-style-type: none"> • Temporary groundwater pumping during construction • Potential for groundwater contamination • Potential that buildings, roadways, and utilities may settle • Potential that pumped groundwater will be discharged to sewer and not recharge shallow aquifer
	Commitments	<p>Long-term/Geology:</p> <ul style="list-style-type: none"> • Address areas of compressible soils with appropriate design and construction techniques to avoid the potential for settlement and bearing failure of building foundations • No soils will be placed in floodplains or wetlands unless permitted <p>Short-term/Geology:</p> <ul style="list-style-type: none"> • Develop a stormwater pollution prevention plan as a part of the permitting process • Use wildlife-friendly BMPs to avoid the potential effects of soil erosion when topsoil is removed <p>Long-term/Groundwater:</p> <ul style="list-style-type: none"> • Tunnels designed to minimize inflow of groundwater through various design features and BMPs <p>Short-Term/Groundwater:</p> <ul style="list-style-type: none"> • Adhere to permit requirements related to groundwater pumping and discharge from pumping • Employ proper BMPs associated with groundwater removal during construction, to minimize the risk of building settlement • Within Minneapolis, send groundwater discharged to the sanitary sewer system to the treatment plant on the Mississippi River

Category		Summary of Impacts and Mitigations
	Mitigation Measures	<p>Long-term/Groundwater:</p> <ul style="list-style-type: none"> • Prepare a groundwater management plan, to be approved by MnDNR and applicable local jurisdictions before construction, which will address collection, storage, and disposal of surface water runoff and pumped groundwater following construction of the Project, and consider concerns about placement of stormwater handling facilities in or near wellhead protection areas • Include in the groundwater management plan, particularly within the Kenilworth Corridor, monitoring, which will be used to assess excessive groundwater infiltration and to prioritize any potential repairs to the waterproofing systems <p>Short-term/Groundwater:</p> <ul style="list-style-type: none"> • Develop and implement a monitoring plan that provides means for detecting the settlement of buildings, roads, or parking areas, so that additional remediation methods could be employed, if necessary • Prepare a groundwater management plan, to be approved by MnDNR and applicable local jurisdictions before construction, which will include required groundwater monitoring and management practices during construction • Seal and abandon all water or monitor wells or boreholes installed as part of soil and groundwater investigation; contractor will notify the Minnesota Department of Health if previously unidentified well are encountered during construction and also retain a licensed well contractor to abandon the well, if necessary
3.9 Surface Water Resources	Long-term Direct Impacts	<p>Wetlands^d:</p> <ul style="list-style-type: none"> • Impacts^e on 20 wetlands regulated under the Minnesota Wetlands Conservation Act (4.70 acres) and/or Clean Water Act (1.83 acres) • Impact to 20 linear feet of Kenilworth Channel <p>Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Impacts will result from conversion of undeveloped land and operations and maintenance of the Project • 39.9 acres of new impervious surface • Five new crossings over water bodies • Fill into ditch at Hopkins Operations and Maintenance Facility <p>Floodplains:</p> <ul style="list-style-type: none"> • Long-term fill within 15 locally regulated floodplains (7,296 cubic yards)
	Long-term Indirect Impacts	<p>Wetlands^d:</p> <ul style="list-style-type: none"> • Impacts to wetlands may occur if new development occurs within the proposed station areas <p>Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Impacts will occur as commercial, transportation, and industrial activities in the Project's vicinity increase new point and non-point sources of water pollutants <p>Floodplains:</p> <ul style="list-style-type: none"> • Impacts to floodplains may occur if new development occurs within the proposed station areas
	Short-Term Impacts	<p>Wetlands^d:</p> <ul style="list-style-type: none"> • Impacts^f to 18 wetlands regulated under the Minnesota Wetland Conservation Act (3.83 acres) and/or the Clean Water Act (7.53 acres) • Impact to 60 linear feet of North Fork of Nine Mile Creek • Impact to 100 linear feet of Kenilworth Channel <p>Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Increased rates and volumes of sediment-laden runoff during excavation, accidental spills and leaks from construction vehicles and equipment, and removal of riparian vegetation • Sediment and erosion impacts to public waters and surface water quality will occur near stream crossings, where slopes are greater and construction activities occur closer to the public water, and where controls are more difficult to implement and maintain

Category	Summary of Impacts and Mitigations
	<p>Floodplains:</p> <ul style="list-style-type: none"> • Temporary fill within floodplains • Loss or disturbance of soils and vegetation at some locations, which will increase the likelihood of temporary erosion and sedimentation in floodplains
	<p>Commitments</p> <p>Long-term/Wetlands:</p> <ul style="list-style-type: none"> • Strive to avoid impacts on wetlands through design solutions <p>Short-term/Wetlands:</p> <ul style="list-style-type: none"> • Avoided and minimized short-term impacts to wetlands through design adjustments • Avoid in-stream construction when possible; install temporary portable dams or cofferdams as required • Implement appropriate wildlife-friendly (e.g. natural materials, no welded webbing) construction BMPs <p>Long-term/Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Implement various design features that meet stormwater regulatory requirements including minimizing or eliminating pollutant sources and implementing structural and non-structural BMPs to treat and control runoff <p>Short-term Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Develop a stormwater pollution prevention plan that complies with the Construction General Permit • Long-term and Short-term/Floodplains: • Develop appropriate plans and obtain applicable permits for floodplains, as well as implement BMPs
	<p>Mitigation Measures</p> <p>Long-term/Wetlands:</p> <ul style="list-style-type: none"> • Purchase the required amount of wetland mitigation bank credits based on the long-term impacts and associated replacement ratios identified in the WCA and CWA Section 404 permit applications <p>Short-term/Wetlands:</p> <ul style="list-style-type: none"> • Restore wetlands temporarily affected during construction to existing grade, hydrology, and reseed with appropriate native wetland species seed mix, as required by the WCA and CWA; purchase wetland mitigation bank credits for CWA regulated short-term impacts lasting longer than 180 days <p>Long-term/Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Design stormwater management facilities, which will be approved by local jurisdictions and through final permitting, to provide stormwater treatment in compliance with NPDES requirements • Short-term/Public Waters and Surface Water Quality: • Design stormwater management facilities to provide stormwater treatment in compliance with NPDES requirements <p>Long-term/Floodplains:</p> <ul style="list-style-type: none"> • Implement appropriate compensatory storage within or adjacent to the affected waterbody and where it is not feasible to meet this requirement, request a variance from applicable regulatory agency <p>Short-term/Floodplains:</p> <ul style="list-style-type: none"> • Remove short-term floodplain fill placed during construction and restore elevations to pre-existing conditions resulting in a no net-loss of flood storage volume
3.10 Ecosystems	<p>Long-Term Direct Impacts</p> <p>Threatened and Endangered Species:</p> <ul style="list-style-type: none"> • “No effect” on the Higgins eye (pearly mussel) and Snuffbox mussel, or their associated critical habitats • The Project may affect but is not likely to adversely affect the northern long-eared bat • No element occurrences of the Blanding’s turtle within 0.9 mile of the Project’s alignment; however, MnDNR determined this species may be adversely affected by the Project <p>Habitat:</p> <ul style="list-style-type: none"> • Removal, conversion, degradation, or splitting of existing habitat

Category	Summary of Impacts and Mitigations
	<ul style="list-style-type: none"> • Loss and/or degradation of vegetated areas associated with five land cover types, which could result in a decrease in potential wildlife foraging areas, breeding habitats, and nesting areas • Loss of approximately 60 acres of habitat <p>Migratory Birds:</p> <ul style="list-style-type: none"> • No adverse impacts as it is likely that regulated migratory bird species have adapted to survive in urban areas and tolerate high levels of human activity given the limited forest or woodland areas present
Long-Term Indirect Impacts	<p>Threatened and Endangered Species:</p> <ul style="list-style-type: none"> • Impacts to threatened and endangered species may occur if new development occurs within the proposed station areas <p>Habitat:</p> <ul style="list-style-type: none"> • Increased disturbance of habitat because of activities associated with the daily operation of the light rail (e.g., noise, lighting, dust), as well as an increase in human activity in or adjacent to habitat areas • Impacts to habitat may occur if new development occurs within the proposed station areas <p>Migratory Birds:</p> <ul style="list-style-type: none"> • No adverse impacts as it is likely that regulated migratory bird species have adapted to survive in urban areas and tolerate high levels of human activity given the limited forest or woodland areas present
Short-term Impacts	<p>Threatened and Endangered Species:</p> <ul style="list-style-type: none"> • No adverse impacts on federal or state listed threatened or endangered species, or critical habitat because impacts are avoided through commitments <p>Habitat:</p> <ul style="list-style-type: none"> • Temporary loss of vegetated areas associated with five natural land cover types, which could result in short-term loss of habitat • Temporary loss of approximately 23 acres of habitat <p>Migratory Birds:</p> <ul style="list-style-type: none"> • No adverse impacts because the Project's light rail alignment will be located in a predominantly urban area, and the species of migratory birds that regularly travel throughout or nest within this region are likely familiar with and/or have adapted to dealing with construction activities similar to those associated with construction of the Project
Commitments	<p>Long-term/Threatened and Endangered Species:</p> <ul style="list-style-type: none"> • Implement MnDNR recommendations to avoid direct impacts to the Blanding's turtle (for measures see Section 3.10.3.1) <p>Short-term/Threatened and Endangered Species:</p> <ul style="list-style-type: none"> • Seasonal restriction on removal of trees during the summer northern long-eared bat pup season (June 1 to July 31) at the South Fork Nine Mile Creek • No activities within ¼ mile of a known hibernacula • Implement MnDNR recommendations to avoid impacts to Blanding's turtle as part of the Project's design <p>Long-term/Habitat:</p> <ul style="list-style-type: none"> • Implemented measures identified during design adjustment process to avoid and minimize long-term fragmentation, degradation and/or loss of habitat <p>Short-term/Habitat:</p> <ul style="list-style-type: none"> • Include invasive species and noxious weeds management plan in the Project's construction specifications • Implement measures such as fencing to isolate areas of disturbance, minimize amount of trees and vegetation removed as part of and implement measures to protect aquatic habitat <p>Migratory Birds:</p> <ul style="list-style-type: none"> • Avoid removing nest habitat during primary migratory bird nesting season (May 1 to Aug. 31), where appropriate • Conduct field survey prior to removal of nest habitat during primary bird nesting season (May 1 to Aug. 31) and follow developed protocol should an active nest be encountered

Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> Comply with the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Statutes [Stat.] 250), which prohibits taking, possession, or commerce of these species
	Mitigation Measures	<p>Long-term/Habitat:</p> <ul style="list-style-type: none"> Incorporate native landscaping into the Project's design, where applicable and appropriate <p>Short-term/Habitat:</p> <ul style="list-style-type: none"> Reseed and restore habitat that is temporarily disturbed during construction, where appropriate, upon construction completion
3.11 Air Quality and Greenhouse Gases	Long-term Direct Impacts	<ul style="list-style-type: none"> Beneficial effects: <ul style="list-style-type: none"> Lower levels of mobile source air toxics emissions in the region, with projected reduction in vehicle travel when passengers switch from driving to light rail No adverse impacts
	Long-term Indirect Impacts	<ul style="list-style-type: none"> Beneficial effects: <ul style="list-style-type: none"> Improved traffic conditions on the region's travel network will reduce vehicle emissions and contribute to air quality improvements Net Greenhouse Gas emissions reduction in the region and beneficial GHG and climate change effects No adverse impacts
	Short-term Impacts	<ul style="list-style-type: none"> Temporary increase in air emissions from project construction Temporary increase in greenhouse gases from the construction equipment and vehicles Short-term increases in dust in and around the project area from construction activities
	Commitments	<p>Short-term/Greenhouse Gases:</p> <ul style="list-style-type: none"> Implement BMPs, such as energy efficient construction equipment vehicles and limiting equipment and vehicle idling time during construction to reduce greenhouse gas emissions from construction activities <p>Short-term/Air:</p> <ul style="list-style-type: none"> Comply with federal and state regulations, including the EPA's emission standards for on-road vehicles and off-road construction equipment, the state air rules in Chapter 7023: Mobile and Indirect Sources, and the applicable MnDOT's Standard Specifications for construction Implement BMPs to minimize temporary construction emission impacts, including, but not limited to: <ul style="list-style-type: none"> Minimization of land disturbance during site preparation Watering of the construction site Stabilization of dirt piles if they are not removed immediately Use dust suppressants on unpaved areas Covering trucks while hauling soil/debris off-site or transferring materials Minimization of unnecessary vehicle and machinery idling Use of energy efficient equipment and vehicles Implement EPA-recommended measures where applicable (See Section 3.11.3.5 for a detailed list of measures)
	Mitigation Measures	None
3.12 Noise	Long-term Direct Impacts	<ul style="list-style-type: none"> Without mitigation: 237 moderate noise impacts (52 buildings) and 558 severe noise impacts (69 buildings) for residential land uses; one moderate noise impact for institutional land uses With mitigation: 59 moderate noise impacts (22 buildings) for residential land uses⁹
	Long-term Indirect Impacts	<ul style="list-style-type: none"> Increased development near new light rail stations will likely result in more people having exposure to the noise produced by light rail vehicles and park-and-ride lots Increase in transit ridership will likely reduce roadway traffic noise

Category		Summary of Impacts and Mitigations
	Short-term Impacts	<ul style="list-style-type: none"> Elevated noise levels from construction equipment For residential land use, at-grade track construction noise impacts can extend 120 feet from the construction site If nighttime construction is conducted, noise impacts from at-grade construction can extend 380 feet from the construction site
	Commitments	<p>Short-term:</p> <ul style="list-style-type: none"> Require construction equipment used by contractors be properly muffled and in proper working order Develop a nighttime construction mitigation plan if nighttime construction is deemed necessary Conduct construction activities during daytime hours, except when required and allowable within local noise ordinance procedures
	Mitigation Measures	<p>Long-term:</p> <ul style="list-style-type: none"> Mitigate for severe and moderate impacts, where the existing noise levels exceed 65 dBA Ldn or where there is an increase in noise due to the Project of three dB or greater, where reasonable and feasible, in accordance with the noise mitigation guidelines contained in the Regional Transitway Guidelines (March 2016) Employ BMPs to minimize noise project-wide, including use of wheel skirts (panels over the wheels) to reduce wheel/rail noise and continuously welded rail to eliminate gaps in the tracks that generate additional noise; conduct wheel truing to keep wheels smooth and round and rail grinding to remove corrugations; and apply lubrication if/where needed Conduct wheel truing (to keep wheels smooth and round) and rail grinding (to remove corrugations) on a regular basis, and employ lubrication where appropriate and as needed Locate noise generating elements (e.g., crossovers) away from sensitive locations, where possible Implement the following mitigation measures for residential and institutional locations: <ul style="list-style-type: none"> Provide sound insulation improvements at building nearest LRT track: Residence Inn, Eden Prairie Construct 8' high noise barrier extending 1,800'; Claremont Apartments, Minnetonka Implement design elements for quiet zones, where the routine sounding of horns would be eliminated because of safety improvements at at-grade crossings, including modifications to streets, raised median barriers, four quadrant gates, and other improvements designed and implemented by the Project and consistent with quiet zone readiness at the following locations: <ul style="list-style-type: none"> Hopkins Plaza Apartments, Hopkins 7th Avenue, Hopkins Sonoma Apartment, Hopkins 6th Avenue, Hopkins Town Terrace Apartments, Hopkins Westside Apartments, Hopkins Creekwood Estates, Hopkins Railroad Avenue, St. Louis Park Village in the Park Condos, St. Louis Park TowerLight, St. Louis Park 35th Street Apartments, St. Louis Park Construct 3' high parapet barrier extending 500' on elevated structure over Excelsior Boulevard, Hopkins Construct 8' to 11' noise barrier extending 760', Railroad Avenue, Hopkins Construct 2' high parapet wall and rail dampers 300', Kenilworth Channel, Minneapolis Complete on-site testing to determine if residences meet interior noise level criteria: one residence at Burnham Road North located NW of the channel; three residences at Thomas Ave South Implement wayside bell at Thomas Avenue South, Sheridan Avenue South, and South Upton Avenue, Minneapolis <p>Short-term:</p> <ul style="list-style-type: none"> Contractors will prepare a detailed Noise Control Plan for the Project's construction duration. A noise control engineer or acoustician will work with the contractor to prepare a Noise Control Plan in conjunction with the contractor's specific equipment and methods of construction. Key elements of this plan will include: <ul style="list-style-type: none"> Contractor's specific equipment types

Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> - Schedule and methods of construction - Maximum noise limits for each piece of equipment with certification testing - Prohibitions on certain types of equipment and processes during the nighttime hours without local agency coordination and approved variances - Identification of specific sensitive sites where near construction sites - Methods for determining construction noise levels - Implementation of noise control measures where appropriate - Include a 24-hour construction hotline
3.13 Vibration	Long-term Direct Impacts	<p>Vibration:</p> <ul style="list-style-type: none"> • No vibration impacts for residential or institutional land uses <p>Ground-borne noise:</p> <ul style="list-style-type: none"> • Without mitigation: 54 units (five buildings) ground-borne noise impacts for residential land uses in the tunnel section south of the Kenilworth Channel, and one ground-borne noise impact at an institutional land use, an audiology clinic • With mitigation: no vibration impacts to residential or institutional land uses
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Increased development near new light rail stations will likely result in more people having exposure to vibrations produced by LRT and freight rail
	Short-term Impacts	<ul style="list-style-type: none"> • Vibration will result from operation of heavy equipment (pile driving, vibratory hammers, hoe rams, vibratory compaction, and loaded trucks) needed to construct bridges, retaining walls, roads, and park-and-ride facilities
	Commitments	<p>Long-term:</p> <ul style="list-style-type: none"> • Construct a tunnel slab within the Kenilworth Corridor to significantly reduce the number and magnitude of ground-borne noise impacts
	Mitigation Measures	<p>Long-term/Ground-borne noise:</p> <ul style="list-style-type: none"> • Implement highly resilient rail fasteners in the tunnel section (2,200 feet) to eliminate ground-borne noise impacts (the fasteners should be designed to provide at least 5 dB of reduction in vibration levels at 80 Hz and higher) • Replace the existing vibration isolation elements between the floor of the building and the sound booth at Hearing Care Specialists (audiologist) (the isolation elements should provide at least 10dB of reduction in vibration levels at 80Hz and higher) <p>Short-term/Vibration:</p> <ul style="list-style-type: none"> • Apply the following measures where feasible to minimize impacts from construction vibration: <ul style="list-style-type: none"> - Limit Construction Hours: Limit high-vibration activities at night - Construction Specifications: Include limits on vibration in the construction specifications, especially at locations with high-vibration activities - Alternative Construction Methods: Minimize the use of impact and vibratory equipment, where feasible and appropriate - Truck Routes: Use truck haul routes that minimize exposure to sensitive receptors and minimize damage to surface roadways, where appropriate - Pre-Construction Survey: Perform pre-construction surveys to document the existing conditions of structures in the vicinity of sites where high-vibration construction activities will be performed - Vibration Monitoring: If a construction activity has the potential to exceed the damage criteria at a building, the contractor will be required to conduct vibration monitoring and, if the vibration exceeds the limit, the activity must be modified or terminated
3.14 Hazardous and Contaminated Materials	Long-term Direct Impacts	<ul style="list-style-type: none"> • Beneficial Effect: <ul style="list-style-type: none"> - Removal of existing hazardous and contaminated soils within the construction area for the Project • No adverse impacts as operation of the light rail vehicles will not generate hazardous materials or regulated wastes and due to the effectiveness of identified avoidance measures (i.e., BMPs for OMF)

Category		Summary of Impacts and Mitigations
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Beneficial Effect: <ul style="list-style-type: none"> – Potential for known hazardous and contaminated material sites to be cleaned up as development/redevelopment occurs • Long-term management of methane-related indirect impacts on the proposed Hopkins OMF site from the Hopkins Sanitary Landfill may be necessary to limit potential worker exposure to methane
	Short-term Impacts	<ul style="list-style-type: none"> • Earthwork or other disturbance at or in proximity to contaminated areas could mobilize or result in the release of hazardous and contaminated materials • Potential spills of hazardous materials during construction • Discovery of previously undocumented contaminated soil or groundwater contamination encountered during construction • Potential for structures on acquired land to contain contaminated or hazardous materials • Potential exposure of hazardous material to people present within and adjacent to the project construction area
	Commitments	<p>Long-term:</p> <ul style="list-style-type: none"> • Responsible management and containment of hazardous materials that will be used and stored onsite at the proposed Hopkins OMF • Implement industry BMPs for the collection and disposal of oils, grease, and other waste materials generated during vehicle maintenance and repair activities at the Hopkins OMF • Obtain a Generator License through Hennepin County for the Hopkins OMF and comply with applicable requirements for annual reporting/licensing, storage, shipping, record keeping, emergency planning, and disposal requirements • Develop a SPCC plan to minimize potential long-term effects related to accidental spillage of petroleum products stored at the Hopkins OMF • Tunnels designed to minimize inflow of groundwater through various design features and BMPs preventing hazardous materials or contaminated stormwater from entering groundwater <p>Short-term:</p> <ul style="list-style-type: none"> • Develop RAPs for remediation in cases where the presence of contamination has been verified through the Phase II ESAs • Follow OSHA guidelines during construction • Prevent public exposure through physical contact with a contaminated material by site access barriers • Use engineering controls and BMPs to avoid spills of hazardous materials during construction; this includes preparation and adherence to a SWPPP and best management practices, to limit and contain releases and spills to minimize the likelihood of soil and groundwater contamination during construction
	Mitigation Measures	<p>Short-term:</p> <ul style="list-style-type: none"> • Conduct mitigation within the MPCA Brownfield Program regulatory framework and approved RAPs • Implement RAPs, approved by MPCA, to address the risks identified in the Phase I and Phase II environmental site assessments • Prior to the start of construction prepare, and with MPCA approval, prepare a CCP to address the discovery of unknown contamination • Survey structures on acquired land for the presence of hazardous/regulated materials prior to their demolition or modification • Handle and manage potentially hazardous materials in compliance with applicable regulatory standards and dispose of in accordance with an Hazardous Materials Abatement Plans for in-place hazardous/regulated materials, and the RAP/CCP for hazardous/regulated materials in the site soils
3.15 Electromagnetic Fields/ Electromagnetic Interference, and Utilities	Long-term Direct Impacts	<ul style="list-style-type: none"> • No adverse impacts from electromagnetic fields due to the low levels of exposure to people riding the LRT or in adjacent buildings • No adverse impacts from electromagnetic interference because there are no sensitive receptors in the study area • No adverse impacts on utilities because conflicting utilities will be relocated and services maintained
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • No adverse impacts from electromagnetic fields or electromagnetic interference and no adverse impacts on utilities

Category		Summary of Impacts and Mitigations
	Short-term Impacts	<p>EMI/EMF:</p> <ul style="list-style-type: none"> No adverse impacts <p>Utilities:</p> <ul style="list-style-type: none"> Excavation and grading activities, placement of structural foundations and work that requires large-scale equipment could interfere with utilities Relocating water mains could temporarily affect access to and use of fire hydrants
	Commitments	<p>Long-term/Utilities:</p> <ul style="list-style-type: none"> Relocate all conflicting utilities to avoid utility impacts to and to maintain utility service, in accordance with the Southwest LRT Utility Relocation and Management Plan Include measures to minimize stray current and reduce amount of corrosion due to stray current Prior to construction, determine necessary improvements to transmission systems along the corridor through consultation with Xcel Energy <p>Short-term/Utilities:</p> <ul style="list-style-type: none"> Provide temporary utility connections to customers prior to permanent relocation activities Contact area utility companies and utility agencies to request providing line relocation measures and approval of the proposed alteration of utility lines prior to construction Notify affected businesses and residences of planned disruption of service due to construction activities Contact appropriate utility companies and agencies to identify utility lines discovered during construction that were not identified in the contract documents Coordinate with local and state agencies, as required, to relocate specific utilities outside the project corridor: <ul style="list-style-type: none"> Adhere to Minnesota Statute 216B, Public Utilities, which provides terms for which utility companies may operate in public right-of-way Conform to <i>MnDOT Utility Accommodation Policy</i>, which requires public and private utilities to obtain a permit to place utility facilities on trunk highway right-of-way Review any utility installations on, over, or under railroad property, with railroad(s) and obtain approval(s)
	Mitigation Measures	None
3.16 Energy	Long-term Direct Impacts	<ul style="list-style-type: none"> Beneficial effects: <ul style="list-style-type: none"> The Project will have an annual regional energy consumption 109 billion Btu lower than the No Build Alternative Changes due to mode shifts from single-occupant vehicles to transit, reducing energy consumption No adverse impacts
	Long-term Indirect Impacts	<ul style="list-style-type: none"> Beneficial effects: <ul style="list-style-type: none"> Changes due to mode shifts from single-occupant vehicles to transit, reducing passenger vehicle miles traveled Increase in energy consumption from new development and redevelopment No adverse impacts because new development is typically more energy efficient than existing or less dense development
	Short-term Impacts	<ul style="list-style-type: none"> No adverse impacts because energy used for production of raw materials and components for construction will be localized and temporary
	Commitments	<ul style="list-style-type: none"> Design the Project to incorporate opportunities to reduce energy consumption into the Project, including: <ul style="list-style-type: none"> Follow the State of Minnesota Sustainable Building Guidelines (MSBG-B3) Use highly efficient LED lighting throughout the Project (street lighting to building lighting) Maximize use of daylight at OMF, supplemented with lighting control management software Coordinate with Xcel Energy for efficient OMF heating, cooling, and lighting control systems

Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> - Use energy recovery units in the OMF - Use a high-efficiency chiller at OMF - Use condensing boilers at OMF - Use closed-cell cooling tower (free winter cooling)
	Mitigation Measures	None
3.17 Cumulative Impacts	Cumulative Effects Assessment	Direct and indirect adverse impacts will be localized and the Project is not anticipated to generate substantial cumulative impacts for the environmental categories evaluated
Transportation Categories ^a		
4.1 Transit	Long-term Direct Impacts	<ul style="list-style-type: none"> • Changes to Metro Transit or SouthWest Transit facilities and service to accommodate and coordinate with the proposed light rail extension • No adverse impacts
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> - Increase in transit trips - Ridership and operations changes to the existing local bus system - Demand for pedestrian and bicycle access to new light rail stations will increase - Anticipate additional increase in transit ridership due to potential increases in development density or redevelopment in areas surrounding light rail stations • No adverse impacts
	Short-term impacts	<ul style="list-style-type: none"> • Intermittent impacts to bus operations on routes within the construction area, such as temporary stop relocations or closures, route detours, or suspensions of service on segments of routes operating on streets where light rail facilities are constructed
	Commitments	Short-term: <ul style="list-style-type: none"> • Reevaluate transit routes and construction plans to minimize disruption to transit service
	Mitigation Measures	Long-term: <ul style="list-style-type: none"> • Follow Federal and local procedures for route modifications or the suspension of transit service, including completing a Title VI analysis and outreach plan to determine how service changes would affect low-income and minority communities and communicate these changes prior to implementation Short-term: <ul style="list-style-type: none"> • Develop and implement the Construction Mitigation Plan and a Construction Communication Plan. Strategies may include: <ul style="list-style-type: none"> - Issue construction updates and post them on the Project website - Provide advance notice of roadway closures, driveway closures and utility shutoffs - Conduct public meetings - Establish a 24-hour construction hotline - Prepare materials with information about construction - Address property access issues - Assign staff to serve as liaisons between the public and contractors during construction - Post information at bus stops indicating temporary stop closures and/or detour details - Publish information in advance of bus detours on Metro Transit's website and in its on-board information brochure • Develop and implement a construction staging plan, which will be reviewed with the appropriate jurisdictions and railroads. Components of a construction staging plan include traffic management plans and a construction timeline.
4.2 Roadways and Traffic	Long-term Direct Impacts	<ul style="list-style-type: none"> • Physical modifications that will affect local circulation • No adverse impacts

Category		Summary of Impacts and Mitigations
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – Decrease in auto trips on surrounding roadway network as people switch from auto to transit – Additional vehicle traffic from anticipated new development surrounding the light rail stations • No adverse impacts due to capacity upgrades and improvements in locations that could realize increased traffic generated in station areas
	Short-term Impacts	<ul style="list-style-type: none"> • Short-term traffic impacts from construction activities such as: <ul style="list-style-type: none"> – Relocation of existing utilities – Removal of existing surface features within the right-of-way or between the curbs – Excavation and construction of new subsurface features required for the LRT system and adjacent roadways including stormwater drainage systems and various electrical facilities – Construction of new light rail track, stations, electrical power systems, roadways, and bridges – Installation of above ground light rail system operation facilities • Temporary, partial and full closures of existing streets and driveways
	Commitments	Long-term: <ul style="list-style-type: none"> • Implement roadway and intersection improvements to avoid any new or worsened congested intersections, compared to the No Build Alternative in 2040
	Mitigation Measures	Short-term: <ul style="list-style-type: none"> • Develop and implement the Construction Mitigation Plan, Construction Communication Plan, and construction staging plan (see 4.1) • Comply with applicable state and local regulations related to the roadway closures and the effects of construction activities, including MnDOT, Hennepin County, and all municipalities • Contractor compliance with all guidelines established in the Minnesota Manual on Uniform Traffic Control Devices (2015) • Appropriate jurisdictions to review construction staging and mitigation documents • Secure required permits • Contractor to develop traffic control plans based on information identified in the construction documents and the Construction Mitigation Plan. Traffic control plans will be reviewed by appropriate jurisdictions and the Council prior to initiation of construction activities.
4.3 Parking	Long-term Direct Impacts	<ul style="list-style-type: none"> • Removal of 692 off-street parking spaces at 16 properties • Removal of an existing publicly owned park-and-ride lot (52 spaces) • Addition of 98 on-street parking spaces at five locations • Removal of 252 on-street parking spaces at nine locations • New park-and-ride lots at nine light rail stations, for a combined addition of 2,487 new park-and-ride spaces
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Could affect supply of and demand for off-street and on-street parking around station areas as a result of development/redevelopment • Spillover parking could occur at stations where there are no park-and-ride lots planned • Spillover parking could occur in the vicinity of the proposed SouthWest and Beltline Stations
	Short-term Impacts	<ul style="list-style-type: none"> • Temporary removal of on-street parking spaces to facilitate construction
	Commitments	None
	Mitigation Measures	Long-term: <ul style="list-style-type: none"> • Compensate business owners for loss of off-street parking spaces, based on the terms of the purchase agreement between the Council and property owner • Complete a Regional Park-and-Ride System Report on an annual basis. As part of this effort, the Council and Metro Transit will collaborate with regional transit partners, local governments, and MnDOT to conduct an annual regional park-and-ride survey, which

Category		Summary of Impacts and Mitigations
		<p>tracks facility use and emerging travel patterns by park-and-ride users across the region to identify the appropriate mitigation, as needed and where feasible. The results of this survey are published in the annual report.</p> <ul style="list-style-type: none"> • Develop a joint use agreement to share parking with SouthWest Transit for the park-and-ride lot adjacent to the station • Identify suitable replacement locations prior to any displacement of on-street handicap parking spaces or on-street truck loading zones <p>Short-term:</p> <ul style="list-style-type: none"> • Develop a Construction Mitigation Plan that will address temporary on-street parking loss during the construction of the Project (see 4.1)
4.4 Freight	Long-term Direct Impacts	<ul style="list-style-type: none"> • Changes to existing freight rail infrastructure, such as shifting the freight mainline up to 45 feet, removing siding track, and reconstruction of existing freight rail bridges • No adverse impacts as there are no substantial changes to freight rail operations
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • None^h
	Short-term Impacts	<ul style="list-style-type: none"> • Impacts to freight rail operations resulting from construction activities along the three freight rail corridors adjacent to the Project, including multiple stoppages
	Commitments	<ul style="list-style-type: none"> • Develop specifications for the contractor to follow in developing and implementing construction staging and sequencing plans
	Mitigation Measures	<p>Short-term:</p> <ul style="list-style-type: none"> • Develop and implement freight rail operation coordination plans to facilitate coordination between the Project and the affected freight railroads during construction activities affecting freight rail operations <ul style="list-style-type: none"> – Provide provisions in construction contract to identify how the contractor will interact with railroads – Work with affected freight rail owners and operators to sequence construction to minimize effects on freight movements and to identify optimal periods for closing the rail service and reducing speeds – Use flaggers to allow freight rail operations to continue
4.5 Bicycle and Pedestrian	Long-term Direct Impacts	<ul style="list-style-type: none"> • Changes to pedestrian and bicycle facilities including intersection modifications, new station area platform access points, new at-grade sidewalk and trail crossings of LRT tracks, and modifications to trail widths • Additions or modifications of facilities that will have a positive impact on pedestrian and bicycle travel, such as signalization of currently unsignalized roadway intersections, construction of new sidewalks or continuation of existing sidewalks around station areas, and geometry changes to roadways which may result in reduced pedestrian crossing distances • Adverse impacts may include relocation of public trails, trail and station area conflicts, Kenilworth Trail widths, displacement of private trails, and a loss of queuing space for the at-grade LRT and freight crossing near Penn Station
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Increase in pedestrian and bicycle activity in the station areas and along the regional trails
	Short-term Impacts	<ul style="list-style-type: none"> • Changes to pedestrian and bicycle facilities, including intersection modifications, reconstruction of freight rail crossings, and trail and sidewalk detours • Indirect impacts include reduced pedestrian and bicycle volumes on existing facilities
	Commitments	<p>Long-term:</p> <ul style="list-style-type: none"> • Apply the following to changes to pedestrian and bicycle facilities based on the manuals, standards, and engineering best practices: <ul style="list-style-type: none"> – Construct ADA-compliant curb ramps and detectable warnings to the latest standard at light rail stations, at-grade crossings of LRT tracks, as well as at roadway intersections that will be modified – Update pedestrian change interval times at signalized intersections to allow additional crossing time; by the appropriate jurisdiction with the assistance from the Council – Conform modifications to roadway geometry and local jurisdiction's changes to signalized intersections to the <i>Minnesota Manual of Uniform Traffic Control Devices</i>, 2015 Edition, as appropriate and in coordination with the applicable jurisdiction

Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> – Provide stairs and ramps to make the pedestrian and bicycle connections possible at the Opus, West Lake, and Penn light rail stations in areas where grades inhibit pedestrian and bicycle access to stations – Follow the recommendations from the AASHTO <i>Bike Design Guide</i>, where appropriate – Provide elevators at the West Lake and Penn stations – Replace all existing public regional and local trails relocated by the Project with similar facilities that will provide the same connectivity; in some cases trail relocations include the addition of grade-separation where a trail crosses a roadway under existing conditions • Include wayfinding, regulatory and warning signage, and markings of trail intersections to address conflicting movements at station areas <p>Short-term:</p> <ul style="list-style-type: none"> • Provide a trail detour route or facility prior to construction activity at locations where existing trails and sidewalks may be obstructed by construction activity. Pedestrian and bicycle facilities will be maintained during construction in one of the following ways: <ul style="list-style-type: none"> – Trail detour route. A signed route along other trails or roadways that provides a bicycle and pedestrian connection around an obstruction of the existing trail. Bicycle connections could be on another trail or on an existing street (with or without bike lanes). Pedestrian connections could be on another trail or on a sidewalk along an existing street. – Trail detour facility. A temporary trail facility built to re-route bicycle and pedestrian traffic around an obstruction, usually located close to the existing trail. – Sidewalk detour route. A signed route that provides pedestrian access to an area where access currently exists via another nearby sidewalk, frequently on the opposite side of a roadway. Where feasible, these temporary facilities will be as ADA compliant as the existing facilities. • Sidewalk detour facility. A temporary paved facility built to re-route pedestrian traffic in areas where another nearby sidewalk does not exist. Where feasible, these temporary facilities be as ADA compliant as the existing facilities. An exception to the above is an unforeseen safety issue during construction that would obstruct the trail or sidewalk and necessitate an immediate, short term closure. In this case, the trail or sidewalk may be closed and remain closed for five days or less without an available detour route or facility.
	Mitigation Measures	<p>Long-term:</p> <ul style="list-style-type: none"> • Any measures to address the removal of the trail between Flying Cloud Drive and West 70th Street (e.g., replacement of the trail), will be determined by the property owner as part of the Project's property acquisition process <p>Short-term:</p> <ul style="list-style-type: none"> • Develop and implement the Construction Mitigation Plan, Construction Communication Plan, and construction staging plan (see 4.1)
4.6 Safety and Security	Long-term Direct Impacts	<ul style="list-style-type: none"> • Modifications to existing freight rail facilities, introduction of light rail stations and related facilities, new at-grade LRT crossings of roadways, potential changes to emergency vehicle access and response times, light rail service in the vicinity of freight rail service, and new light rail tunnels. • No adverse impacts based on the incorporation of safety and security-related design and operational elements into the Project.
	Short-term Impacts	<ul style="list-style-type: none"> • Potential for temporary delays in emergency response resulting from construction activities.
	Commitments	<p>Long-term:</p> <ul style="list-style-type: none"> • Conform to FTA's Rail Fixed Guideway Systems; State Safety Oversight Program for Safety and Security Guidance for Recipients with Major Capital Projects (Circular C 5800.1), covered under 49 CFR Part 633 – Project Management Oversight • Coordinate with, as applicable, the State of Minnesota railroad and pipeline safety regulations that went into effect in July 2014 as part of MN Chapter 312 • Implement the Project's Safety and Security Management Plan (SSMP) and the Metro <i>Light Rail Transit Design Criteria</i> to avoid potential safety issues at new light rail stations, including emergency equipment and appropriate lighting for public areas • Install fencing near at-grade trail or sidewalk crossing, in station areas, and between light rail and freight rail alignment when adjacent to a trail or sidewalk, where possible • Design at-grade LRT crossings of sidewalks and trails per the Metro Light Rail Transit Design Criteria to include flashing light signals with an audible warning to notify pedestrians of a train's arrival and detectable warnings and signs

Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> • Design shared freight rail and light rail crossings to meet FRA requirements for at-grade crossings, including requirements for train horn quiet zones as described in the Train Horn Quiet Zone Final Rule (49 CFR Part 222), where applicable • Maintain emergency vehicle access to areas within the vicinity of the Project • Coordinate with affected emergency service providers including identification of alternative crossing routes • Implement safeguards from the Metro <i>Light Rail Transit Design Criteria</i> including emergency guardrails • Install intrusion detection for possible freight derailment where clearance between the centerline of the LRT tracks and the centerline of the freight tracks is less than 50 feet • Install corridor protection barriers between freight rail and light rail tracks where clearance between centerlines is less than 25 feet • Include safeguards in the catenary system for the Project to help minimize the possibility of sparking occurring in the overhead catenary wires • Regularly inspect pantographs for grooves along the pantograph's carbon strip, which could cause arcing • Where the light rail alignment will be adjacent to a freight rail alignment, the light rail alignment will be primarily on segregated right-of-way, in accordance with the National Electric Safety guidelines • Participate in the planning, performance, and evaluation of emergency simulations on the system in coordination with the LRT FLSSC • Implement Metro Light Rail Transit Design Criteria, as well as National Fire Protection Association 130: Standard for Fixed Guideway Transit and Passenger Rail Systems, and Circular C 5800.1, Safety and Security Guidance for Recipients with Major Capital Projects in the shallow tunnel in the Kenilworth Corridor and at Highway 62 to provide security and/or enhanced safety <p>Short-term:</p> <ul style="list-style-type: none"> • Coordinate with emergency service providers to provide schedule for construction activities and identify detour routes to minimizing delay for emergency response vehicles • Maintain required access during established periods or keep one lane of traffic open on main arterials as described in the Construction Mitigation Plan • Maintain federal Occupational Safety and Health Administration (OSHA) and Minnesota OSHA standards for safety of construction site personnel to minimize and/or avoid injury to construction workers • Contractors will prepare a project safety and health program along with a site-specific safety plan to ensure that, while on the work site and construction activities, contractor and subcontractor personnel comply with the specified safety practices, codes, and regulations as described in the Project's SSMP • Use construction safeguards, such as horizontal and vertical movement and settlement monitoring for both existing freight rail infrastructure and light rail tunnel in support of excavation • Collect and analyze monitoring data (by construction staff) and coordinate with freight railroad operations staff to verify that safe freight rail operations can be maintained through the construction area at all times • Develop and implement freight rail operation coordination plans to facilitate coordination between the Project and the affected freight railroads during construction activities affecting freight rail operations (see 4.4)
	Mitigation Measures	<p>Short-term:</p> <ul style="list-style-type: none"> • Develop a Construction Mitigation Plan, Construction Communication Plan, and construction staging plan (see 4.1)

^a This table summarizes the anticipated impacts and mitigation measures for the Project as identified in the Final EIS. All data in the table are approximate. See the corresponding sections of Chapters 3 and 4 for a more detailed description of the anticipated impacts, and mitigation measures. "Mitigation measures" are specific actions that will be incorporated into the project to address anticipated adverse impacts (see also 40 CFR 1508.20). "Commitments" are general actions that will be incorporated into the project that may not be tied to anticipated adverse impacts, such as the use of best management practices (BMPs) or public outreach strategies. If there are no mitigation measures identified for a specific type of impact area, it means that the avoidance measures identified for that environmental category will avoid any adverse environmental impacts for that category, and therefore, no mitigation measures are warranted.

^b 19 viewpoints were selected for assessment within six visual analysis units. The six visual analysis units and the exhibits on which they are mapped include Eden Prairie (Exhibit J-1), North Eden Prairie/Minnetonka/South Hopkins (Exhibit J 6), Hopkins (Exhibit J-9), St. Louis Park (Exhibit J-12), Kenilworth Corridor (Exhibit J 17), and Minneapolis Downtown Fringe (Exhibit J-24).

^c A traction power substation (TPSS) is an electrical substation that converts electric power from the form provided by the electrical power industry for public utility service to an appropriate voltage, current type, and frequency to supply railways, trams (streetcars), or trolleybuses with traction current.

^d The term “wetland” is used to describe any regulated aquatic resource, including streams. See Section 3.9 for additional information.

^e Long-term direct impacts on wetlands regulated under the Minnesota Wetlands Conservation Act are generally defined as impacts not fully restored within six months, and long-term direct impacts to wetlands regulated under the Clean Water Act are generally defined as impacts that are not fully restored.

^f Short-term impacts on wetlands under the Minnesota Wetlands Conservation Act are generally defined as impacts that will be fully restored within six months, and short-term impacts to wetlands regulated under the Clean Water Act are generally defined as impacts that will be fully restored.

^g If the noise mitigation guidelines, as contained in the Regional Transitway Guidelines (March 2016) (see Appendix D), are found to not meet reasonable criterion or if property owner(s) does not approve sound insulation, the Project will result in additional residual noise impacts. Noise mitigation measures include the implementation of quiet zones in some areas where the light rail alignment will be adjacent to freight rail. Quiet zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented by the Project and consistent with quiet zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of quiet zones. If the municipality fails to apply for a quiet zone or FRA fails to approve the quiet zone, the Project may result in additional residual noise impacts. See Section 3.12 and Table 3.12-7 for additional information.

^h See Section 4.4.4.2 for a description of unavailable and unobtainable information on the effect that the proposed Southerly Connection could have on freight rail operations.

Notes: Data are approximate. ADA = Americans with Disabilities Act; AASHTO = American Association of State Highway and Transportation Officials; APE = area of potential effects; BMP = best management practice; CWA = Clean Water Act, CCP = Construction Contingency Plan; CFR = Code of Federal Regulations; EIS = Environmental Impact Statement; dB = decibels; dBA = A-weighted decibels; EPA = U.S. Environmental Protection Agency; FLSSC = Fire Life Safety and Security Committee; FRA = Federal Railroad Administration; HCRRA = Hennepin County Regional Railroad Authority; LOS = level of service; CFR = Code of Federal Regulations; LRT = light rail transit; LRV = light rail vehicle; MOA = Memorandum of Agreement; MnDOT = Minnesota Department of Transportation; MnDNR = Minnesota Department of Natural Resources; MnHPO = Minnesota Historic Preservation Office; MPCA = Minnesota Pollution Control Agency; MPRB = Minneapolis Park and Recreation Board; MN&S = Minneapolis, Northfield, and Southern Railway; OMF = Operation and Maintenance Facility; OSHA = Occupational Safety and Health Administration; RAP = Response Action Plan; SOI's Standards = Secretary of the Interior's Standards for the Treatment of Historic Properties; SPCC = Spill Prevention, Control, and Countermeasure; SSMP = Safety and Security Management Plan; SWPPP = Stormwater Pollution Prevention Plan; T&E = threatened and endangered; TPSS = traction power substation; TC&W = Twin Cities and Western Railway Company, USACE = U.S. Army Corps of Engineers; USFWS = U.S. Fish and Wildlife Service; U.S.C. = United States Code; Uniform Relocation Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act; WCA = Minnesota Wetlands Conservation Act of 1991.

Source: Council, 2015.

21. HOW DOES THE FINAL EIS ADDRESS ENVIRONMENTAL JUSTICE COMPLIANCE?

The environmental justice (EJ) analysis presented in Chapter 5 of this Final EIS was prepared in compliance with the Presidential Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). The guiding principles of Environmental Justice are to (1) avoid, minimize, or mitigate disproportionately high and adverse impacts on minority and low-income populations; (2) ensure the full and fair participation by all potentially affected communities in decision-making processes; and (3) prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority or low-income populations (collectively referred to as EJ populations).

Chapter 5 of this Final EIS first includes the identification and mapping of minority (by race and ethnicity) populations and low-income populations within the Project area. Second, the Final EIS describes the Council's ongoing efforts to communicate with EJ populations and to help ensure their participation in the Project's decision making processes. Third, the Final EIS summarizes the analysis of adverse impacts that will result from the Project, determining if those adverse impacts would affect EJ populations, and assessing whether the Project would result in disproportionate and high adverse impacts to EJ populations. Taking into account the adverse impacts on EJ populations, committed mitigation measures, and benefits to EJ populations, the FTA and Council have concluded that the Project as a whole would not result in disproportionately high and adverse impacts to EJ populations.

22. DOES THE PROJECT INCLUDE ANY JOINT DEVELOPMENT OPPORTUNITIES?

The Final EIS assesses one potential joint development project that may be implemented with the Project, which is the Beltline Station joint development project. That assessment, in Chapter 10 of the Final EIS, describes the proposed joint development project and how the overall Project's environmental impacts would be different without and with the joint development project.

Under the proposed Southwest LRT Project without the Beltline Station joint development project, the Beltline Station in St. Louis Park would include a 268-space surface park-and-ride facility, a bus stop/layover and a passenger drop-off area to be constructed on the east side of Beltline Boulevard in the area between the Beltline Station platform on the south and County Road 25 on the north. Under the proposed Southwest LRT Project with the proposed Beltline Station joint development project, the site directly adjacent to the light rail station would include multistory retail, office, and residential buildings. The site would also include a 540-space park-and-ride lot in a structured parking lot (10 stories). Other parking spaces in the structured parking lot would be available to commercial, office, and retail users of the proposed joint development site. Should the final mix of retail, office, and residential uses occupying the site warrant it, the Beltline Station joint development project would also include the addition of a westbound left-turn lane on Park Glen Road at Beltline Boulevard. A mix of local public and private funds would be used to construct the mix of retail, office, and residential improvements that would occupy the site, as well as the potential additional lane on Park Glen Road.

Additional impacts that would be associated with the Southwest LRT Project with the Beltline Station joint development project include the additional acquisition of 3.15 acres of land; additional multistory buildings that would affect the visual environment around the proposed Beltline Station; approximately 540 additional average weekday transit boardings in 2040 and a reduction in the risk of spill-over parking in the vicinity of the proposed station due to the increased park-and-ride lot capacity at the proposed Beltline Station; and an increase in vehicle trips to and from the joint development project site.

23. WHAT ARE THE PROJECT'S ESTIMATED COSTS AND FUNDING STRATEGY?

The capital cost to fund the Project (both LPA and LRCIs) would be approximately \$1,820 million (in year-of-expenditure dollars). The LPA is estimated to cost approximately \$1,791 million (year of expenditure dollars), and the LRCIs are anticipated to cost approximately \$29.3 million (year of expenditure dollars). The region anticipates securing federal New Starts funds for 50 percent of the cost of the LPA. The remaining 50 percent of the LPA cost is proposed to be funded from the following sources: 9.2 percent from the State of Minnesota; 27.7 percent from the Counties Transit Improvement Board; 9.2 percent from HCRRA; 3.7 percent from additional local contributions; and 0.2 percent from Federal Surface Transportation

Program funds. LRCIs would be funded separately from the LPA. The funding sources for LRCI costs, which could be federal non-New Starts or local sources, are the responsibility of the LRCI sponsors. LRCI sponsors have committed funds for design and environmental activities. Following the opening of construction bids, LRCI sponsors will need to commit funds for construction if they wish to proceed with implementing the LRCIs. In year-of-expenditure dollars, annual operating and maintenance costs for the Project in 2040 are estimated to be approximately \$83.1 million higher than under the No Build Alternative, increasing from approximately \$1,309.0 million to \$1,392.1 million.

24. HOW HAS THE PUBLIC BEEN INVOLVED IN THE PROJECT?

Through the development of the Alternatives Analysis and the Draft EIS, HCRRA led the public involvement efforts. HCRRA maintained a website during development of the Draft EIS and utilized three advisory committees, as well as holding informational meetings and open houses.

For the Supplemental Draft EIS and the Final EIS, public involvement activities became the responsibility of the Council.

After publication of the Draft EIS, the Council led the Project's advisory committee process. The Business Advisory Committee, Community Advisory Committee, Corridor Management Committee, and Council meetings were all open to the public. Each community in the corridor had representation on the advisory committees.

Exhibit ES-2 illustrates the Southwest LRT Project's advisory committee process. Four advisory committees worked with Council staff to provide input during key steps in the NEPA process.

EXHIBIT ES-2

Southwest LRT Project Advisory Committee Process



The Council developed a Project website (www.swlrt.org), as part of the Council website. The Council's Southwest LRT Project website serves as a communications forum and resource to the public, allowing stakeholders to keep informed about Project history, current activities and data, and upcoming milestones.

The ability to sign up for email updates was made available at public meetings held as part of the Project outreach process and on the Project website. The outreach program implemented strategies and techniques to involve low-income and minority citizens and stakeholders in the Southwest Corridor. Council staff hosted public events in locations throughout the Southwest Corridor to give the public opportunities to provide input on Project design efforts and to receive updates and information about Project activities.

In summary, the public outreach program during the NEPA process included a wide range of outreach techniques, including public meetings; open houses; community and business advisory committee meetings; stakeholder and neighborhood meetings; individual and small group briefings; newsletters; a Project website; development of an "e-list" used to send out newsletters, press releases, and meeting information; social media; Project-specific print material; door-to-door outreach; a Project mobile office; and Project staff attendance at community events.

25. WHAT COMMENTS WERE RECEIVED ON THE DRAFT EIS?

A total of 997 comments were submitted, in the form of letters, e-mails, public testimony at the public hearings, and comment cards received at the public open houses and public hearings (see Section 9.1 of the Final EIS for more information on public involvement). Comments were received from individuals, businesses, public interest groups, and public agencies, including local communities and regulatory agencies.

In general, comments in support of the Project noted enhanced transit service, accessibility, and lower transit travel times. Comments opposed to the Project cited cost, concerns about property values and other impacts of the Project. Comments were submitted regarding the following categories: concerns about proposed changes in the Kenilworth Corridor, a proposed bridge over Cedar Lake Parkway, a proposed park and ride lot near the 21st Street Station, impacts to historic and park resources, noise impacts from LRT operations and vibration impacts during construction, and mitigation for residential and commercial properties. Comments were also submitted about the western portion of the alignment in Eden Prairie and included: property acquisition concerns, potential traffic impacts, impacts to loss of parking and effects on business operations, and potential property acquisitions.

Many comments received were related to the location of freight rail relative to the Project. Numerous comments were received opposing freight rail co-location in the Kenilworth Corridor as well as opposing the rerouting of freight rail into St. Louis Park.

Other comments focused on design elements and environmental issues. Specific design issues that generated numerous comments include:

- Support for tunnel or trench in Kenilworth Corridor
- Preferences regarding the location of specific stations, the OMF, etc.
- Alignment adjustment comments, including adjustments in Eden Prairie
- Preference for other Draft EIS Alternatives

Environmental issues that generated numerous comments included:

- Concerns about noise and vibration impacts from LRT, as well as from potentially relocated freight rail operation
- Neighborhood and Community impact concerns over Project implementation
- Concern about acquisitions and displacements, impacts to residents and businesses
- Concerns about maintaining park-like settings and potential impacts on visual quality and impacts from noise for many park resources along the corridor including Cedar Lake Parkway, Purgatory Creek Park, and trails
- Comments on environmental justice, including the need to more thoroughly study impacts from freight rail relocation
- Economic Impacts, including concerns over impacts to freight rail owners and operators resulting from re-route
- Requests for additional analyses on water resources within the study area, including more accurate wetland determinations

All substantive comments received during the Draft EIS comment period and responses to the comments are in Appendix L of this Final EIS.

The Final EIS documents and responds to all substantive comments received on the Draft EIS during their respective public comment periods. See Appendix L.3 of the Final EIS for responses to Draft EIS comments.

26. WHAT COMMENTS WERE RECEIVED ON THE SUPPLEMENTAL DRAFT EIS?

A total of 206 comments were received during the public comment period for the Supplemental Draft EIS. Comments were submitted in the following formats: emails; testimony at the public hearings held on June 16, 17, and 18, 2015; comment cards; and letters. Comments were submitted by the general public, community organizations, elected officials, governmental and regulatory agencies, businesses, and non-profit organizations. The most frequent topics of public comments were noise; vibration; safety and security; general opposition to freight rail co-location; and the AA/NEPA process.

For purposes of responding to the Supplemental EIS comments, the Council organized comments into major themes, including comments received:

- Concerns about safety in the Kenilworth Corridor with freight and LRT co-located
- Project elements, including Engineering of the alignment, stations in the Kenilworth Corridor area
- Project costs and effectiveness
- NEPA process; the scoping process, freight rail as existing condition
- Replacement of the Skunk Hollow Switching Wye with the Southerly Connection (between Bass Lake Spur and the MN& Spur)

Many comments were related to the design adjustments to the LPA within the Kenilworth Corridor. Environmental issues generated numerous comments from individuals as well as community and neighborhood organizations.

FTA and the Council received a variety of comments, many of which expressed concerns related to the safety and security of LRT construction. Operations of LRT within close vicinity to freight in the Kenilworth Corridor, and safety concerns related to hazardous freight rail cargo within the Kenilworth Corridor, and safety of roadway, trail, and sidewalk crossings at 21st Street West accounted for many of the comments received. Comments were submitted expressing concern about visual impacts to the park and historic resources in the Kenilworth Corridor, noise impacts to the Kenwood community, and vibration impacts from LRT tunnel construction. There were comments asking about the rationale for incorporating freight rail co-location into the Project.

Comments expressing concerns about the potential impacts related to replacement of the Skunk Hollow Switching Wye with the Southerly Connection between the Bass Lake Spur and the MN&S Spur were received. A number of comments stated that freight rail operations should not be considered an existing condition and should be excluded from the baseline data.

The Final EIS documents and responds to all substantive comments received on the Supplemental Draft EIS during their respective public comment periods. See Appendix M.4 for responses to the Supplemental Draft EIS comments.

27. HOW CAN I OBTAIN A COPY OF THE FINAL EIS?

The Final EIS and supporting documentation are available on the Project website (www.swlrt.org). A printed copy of the Final EIS and supporting documents are available for review during regular business hours at the Southwest LRT Project Office (6465 Wayzata Boulevard, Suite 500, St. Louis Park, MN 55426) during regular business hours. Printed copies and/or electronic copies will also be available at city halls and libraries in Eden Prairie, Hopkins, Minneapolis, Minnetonka, and St. Louis Park. CDs of the Final EIS will also be sent to interested businesses, individuals, and organizations, when requested.

For additional information on this Final EIS or to request a copy, contact:

- Mail: Nani Jacobson, Assistant Director, Environmental and Agreements
Metro Transit – Southwest LRT Project Office
6465 Wayzata Boulevard, Suite 500
St. Louis Park, MN 55426
OR
Marisol Simón
Regional Administrator
Federal Transit Administration
200 West Adams Street, Suite 320
Chicago, IL 60606
- Email: swlrt@metrotransit.org

28. WHEN DID THE COMMENT PERIOD FOR THE FINAL EIS START AND WHEN WILL IT END?

The Notice of Availability for the Final EIS was published in the *Federal Register* on May 13, 2016, and in the *EQB Monitor* on May 16, 2016. Under MEPA, the Notice of Availability provides for submittal of written comments on the adequacy of the Final EIS for a period of not less than ten (10) days. Comments on the adequacy of the Final EIS are being accepted through June 13, 2016. Comments on the adequacy of the Final EIS may be submitted through:

Mail: Nani Jacobson, Assistant Director, Environmental and Agreements
Metro Transit – Southwest LRT Project Office
6465 Wayzata Boulevard, Suite 500
St. Louis Park, MN 55426

Email: swlrt@metrotransit.org

29. WHAT HAPPENS AFTER THE CLOSE OF THE FINAL EIS COMMENT PERIOD?

Following publication of the Final EIS and the written comment period, the FTA will prepare and issue the Project's Record of Decision (ROD). The ROD will state FTA's project decision, identify the alternatives considered and selected (including specification of the alternative or alternatives considered to be environmentally preferable), and itemize mitigation commitments. The ROD must be issued by FTA before federal funding and permits can be approved. All comments will be published on the project website (www.swlrt.org) and comments and issues will be responded to in the Project's ROD. After publication of the Final EIS, the Council will also issue an Adequacy Determination for the Final EIS in accordance with Minnesota environmental rules (Minn Administrative Rules 4410.2800). The Council will notify all persons who received a copy of the Final EIS (see Appendix A of the Final EIS for the list of recipients) of its adequacy decision within five days of the decision, and public notice of the decision will be published in the *EQB Monitor*.

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1 Purpose and Need

This chapter describes the Southwest Light Rail Transit (LRT) (METRO Green Line Extension) Project's Purpose and Need.¹ It provides a description of the context of the Project by providing background to the key factors that make the Southwest LRT Project important for people who live and work in the southwest metropolitan area. The Southwest LRT (METRO Green Line Extension) is approximately 14.5-miles of new double-track proposed as an extension of the METRO Green Line (Central Corridor LRT), which will operate from downtown Minneapolis through the communities of St. Louis Park, Hopkins, Minnetonka, and Eden Prairie, passing in close proximity to Edina (see Exhibit 2.1-1). See Chapter 2 for a detailed description of the Project and the processes that lead to this Final EIS.

This chapter includes the following sections:²

- 1.1 Project Need
- 1.2 Project Purpose
- 1.3 Project Context
- 1.4 Declining Mobility
- 1.5 Limited Competitive, Reliable Transit Options for Choice Riders and Transit Dependent Populations including Reverse Commute Riders
- 1.6 Need to Maintain a Balanced and Economically Competitive Multimodal Freight System
- 1.7 Regional and Local Planning and Light Rail Expansion

1.1 Project Need

The transportation issues facing the Southwest LRT Project Corridor illustrate the need for improved mobility, accessibility, and system linkages to key activity centers (Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and downtown Minneapolis) through high-capacity transit service. The Southwest LRT Project is one of several transit corridors identified in the Council's 2040 Transportation Policy Plan as being in need of enhanced transit service. The Southwest LRT Project Corridor continues to experience increases in population and employment with limited additional traffic capacity on existing streets and highways, resulting in increased travel time, delays, and air pollution. Portions of the Southwest LRT Project Corridor are already densely developed. New development and redevelopment in areas of the corridor are expected to generate increases in travel demand.

Four primary need factors make the Southwest LRT Project important for people who live and work in the southwest metropolitan area: (1) declining mobility; (2) limited competitive, reliable transit options for choice riders and people who rely on public transportation, including reverse-commute riders; (3) need to maintain a balanced and economically competitive multimodal freight system; and (4) regional/local plans calling for investment in additional light rail transit projects in the region. The four need factors are discussed in Sections 1.4 through 1.7, respectively.

1.2 Project Purpose

The purposes for enhancing transit service in the Southwest LRT Project Corridor (which is defined and illustrated in Section 1.3) are summarized below.

¹ The United States Army Corps of Engineers has adopted the following overall project purpose for the Southwest LRT Project that it will use to direct the range of reasonable alternatives to be considered in the Clean Water Act Section 404 permit application process: The overall project purpose is to provide high-capacity transit service in the Southwest LRT Project study area.

² A discussion of goals and objectives was included in the Draft EIS and is not included in this Final EIS chapter. Consideration of the goals and objectives were primarily used and presented in the Alternatives Analysis and the Draft EIS to support the identification of the Locally Preferred Alternative (LPA) and to compare the LPA with other alternatives being evaluated.

- The Southwest LRT Project will improve access and mobility to the jobs and activity centers in the Minneapolis central business district, as well as along the entire length of the corridor for reverse-commute trips to the expanding suburban employment centers.
- The Southwest LRT Project will provide a competitive, cost-effective travel option that will attract choice riders to the transit system. The competitive and reliable travel time for the Southwest LRT Project is attributed to the diagonal nature of the line compared to the north-south/east-west orientation of the roadway network and to the increasing levels of congestion of the roadway network.
- The Southwest LRT Project will be part of the region's system of transitways integrated to support regional transportation efficiency. Since the late 1990s, the Southwest LRT Project has been identified by the Metropolitan Council (Council) as warranting a high level of transit investment to respond to increasing travel demand in a highly congested area of the region. Due to congestion levels on the roadway network, speed and use limitations of the shoulder bus operations, and capacity constraints in downtown Minneapolis, a bus option is limited in its ability to adequately serve the travel demand and to provide reliable travel times.

1.3 Project Context

The Southwest LRT Project Corridor (the Corridor) is shown on Exhibit 1.3-1.³ Some or all of 19 communities and three counties southwest of downtown Minneapolis are within the Corridor, including the major activity centers of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and southwestern and downtown Minneapolis. The Corridor represents the general area where the proposed project would have its greatest effect on travel demand⁴.

The lakes and streams shown on Exhibit 1.3-1 are the most prominent natural features that constitute constraints on the existing and planned transportation infrastructure in the Corridor, including the proposed light rail alignment. Cedar Lake, Lake of the Isles, and Nine Mile Creek are among the most prominent water bodies in the Corridor adjacent to the proposed light rail alignment.

1.3.1 Corridor Highway System

Major highways and segments of the Interstate in the Project Corridor are listed below and shown on Exhibit 1.3-2.

East-West Highway Facilities

- Minnesota 55
- Highway 12
- Highway 7
- Highway 212
- Highway 62
- Highway 5/I-494
- Highway 282/Highway 13

North-South Highway Facilities

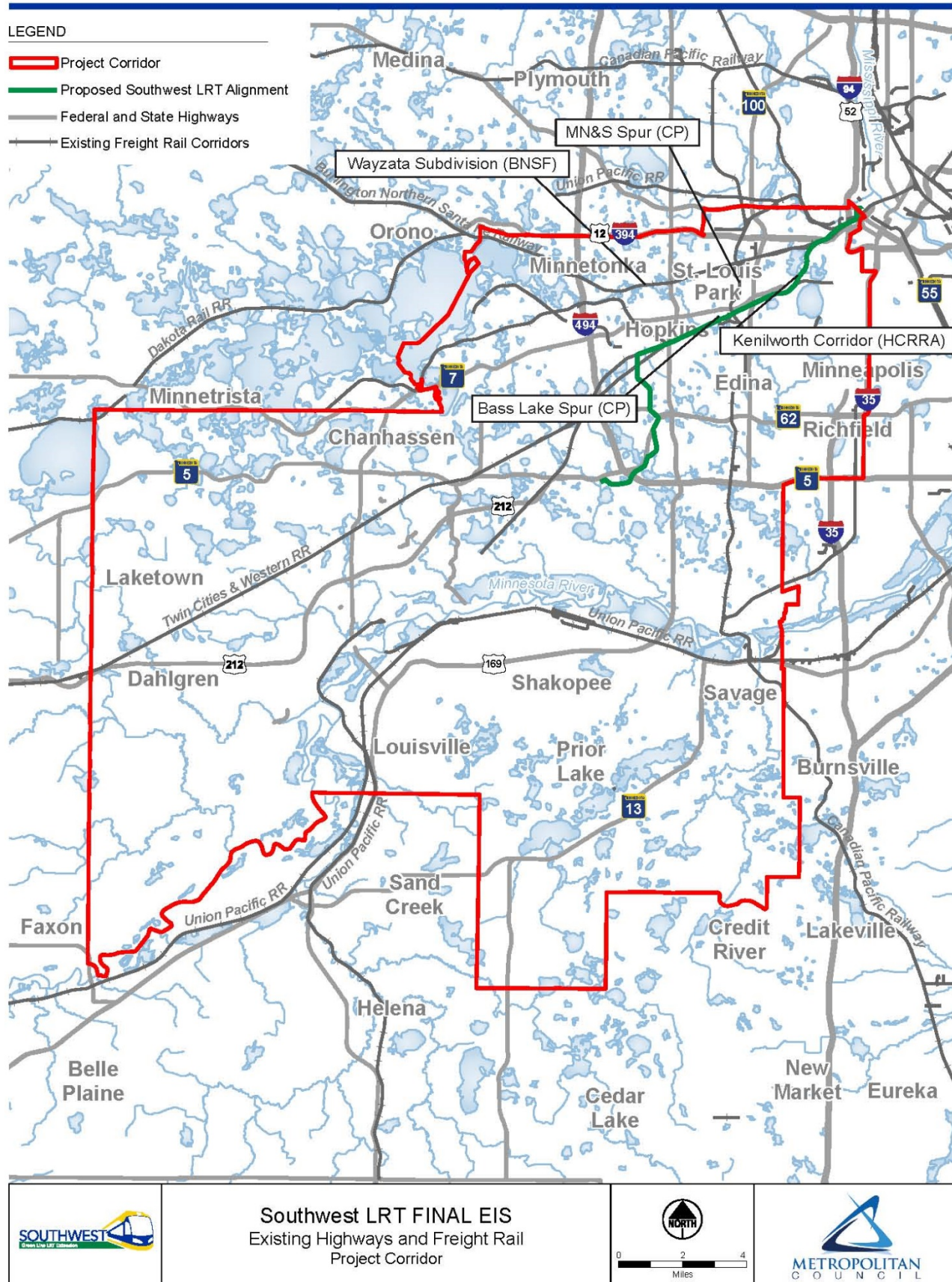
- Highway 100
- Highway 169
- I-35W

³ The Southwest LRT Project Corridor, illustrated on Exhibit 1.3-1, is the general travel shed that encompasses a geographic area where transit travel patterns are most likely to be affected by the alternatives under consideration throughout the Project's planning and environmental process. Its broad area reflects the ability of transit patrons to access the proposed project directly through walk access to stations, as well as through connecting and feeder bus lines and park-and-ride and drop-off facilities. This definition of the corridor is used to assess transportation impacts in Chapter 4.

⁴ Travel demand is the estimated person trips that would be taken on a transportation system, including highways, transit facilities, and bike and pedestrian facilities. See Sections 4.1 and 4.2 for additional information.

EXHIBIT 1.3-1

Southwest LRT Project Corridor



1.3.2 Transit

Transit service in the Corridor is limited to bus service and is primarily provided by Metro Transit, the largest transit provider in the region, SouthWest Metro Transit, and Minnesota Valley Transit Authority. A total of 49 bus routes, including 27 express, three limited stop, and 18 local routes, serve the Corridor. On an average weekday, nearly 28,000 commuters from the cities in the Corridor use bus transit to travel to downtown Minneapolis. Existing park-and-ride lots in the Project Corridor are shown on Exhibit 1.3-2.

The Project (METRO Green Line Extension) will connect southwest Minneapolis and the region's southwest suburbs with the region's system of transitways, which consist of existing light rail transit on the Blue Line and Green Line, bus rapid transit on the Red Line (Cedar Avenue) and Orange Line (I-35W South), the Northstar Commuter Rail, and express bus routes (Exhibit 1.3-3). Development of the Project will also include local bus service revisions focused on maintaining and enhancing overall transit service in the corridor. See Section 2.1.1.4 for more information.

Planned future transit projects in or near the Project Corridor include the following:

- **METRO Orange Line.** Approximately 16-mile highway bus rapid transit improvement with plans for six new stations along I-35W south from Minneapolis to Burnsville
- **METRO Blue Line Extension.** Approximately 13-mile light rail extension of the existing Blue Line with plans for up to 11 new stations from Minneapolis (Target Field Station) to Brooklyn Park
- **METRO Gold Line.** Approximately 12-mile dedicated bus rapid transit line with plans to include up to 11 new stations from Saint Paul to Woodbury
- **METRO Red Line Extension.** Approximately three-mile extension of the Red Line with plans to include three new stations from Apple Valley to Lakeville
- **Penn Avenue Arterial Bus Rapid Transit.** Bus rapid transit improvements in an arterial bus corridor running primarily along Penn Avenue and Highway 55 in Minneapolis from downtown Minneapolis to Brooklyn Center Transit Center
- **Chicago Emerson-Fremont Arterial Bus Rapid Transit.** Bus rapid transit improvements in an arterial bus corridor running primarily along Chicago/Portland Avenues, American Boulevard, and Emerson and Fremont Avenues from Mall of America Transit Station in Bloomington to Brooklyn Center Transit Center

1.3.3 Freight Rail

There are currently four active freight rail lines within the Project Corridor: the Canadian Pacific- (CP-) owned Bass Lake Spur, the CP-owned Minneapolis, Northfield, and Southern Railway (MN&S) Spur, the Hennepin County Regional Railroad Authority (HCRRA) Cedar Lake Junction (locally referred to as the Kenilworth Corridor), and a short segment of the BNSF-owned Wayzata Subdivision from downtown Minneapolis to the MN&S Spur in St. Louis Park (Exhibit 1.3-1). More information about freight rail can be found in Section 4.4.

EXHIBIT 1.3-2

Highways, Park-and-Ride Lots, Regional Trails within the Southwest LRT Project Corridor

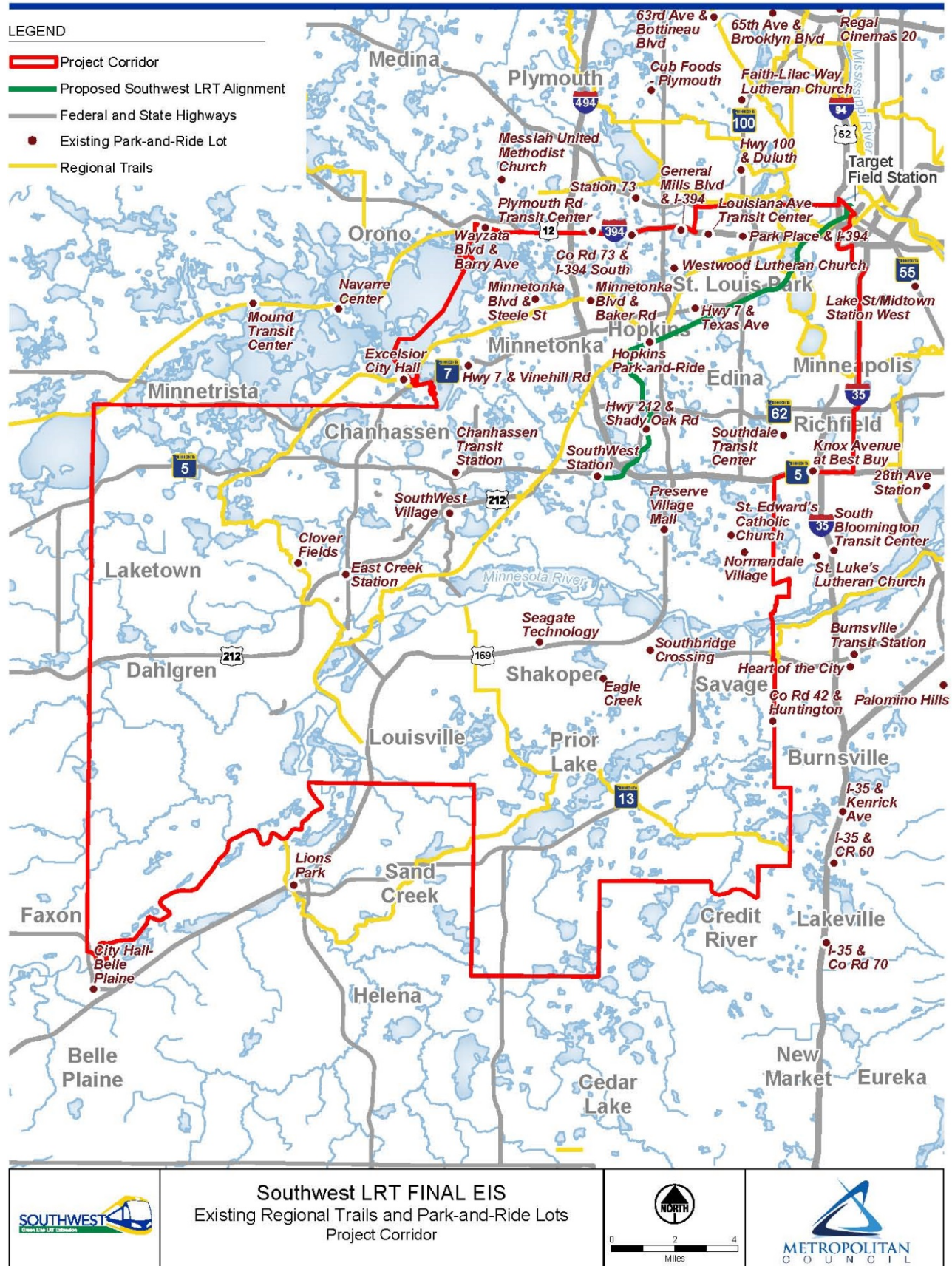
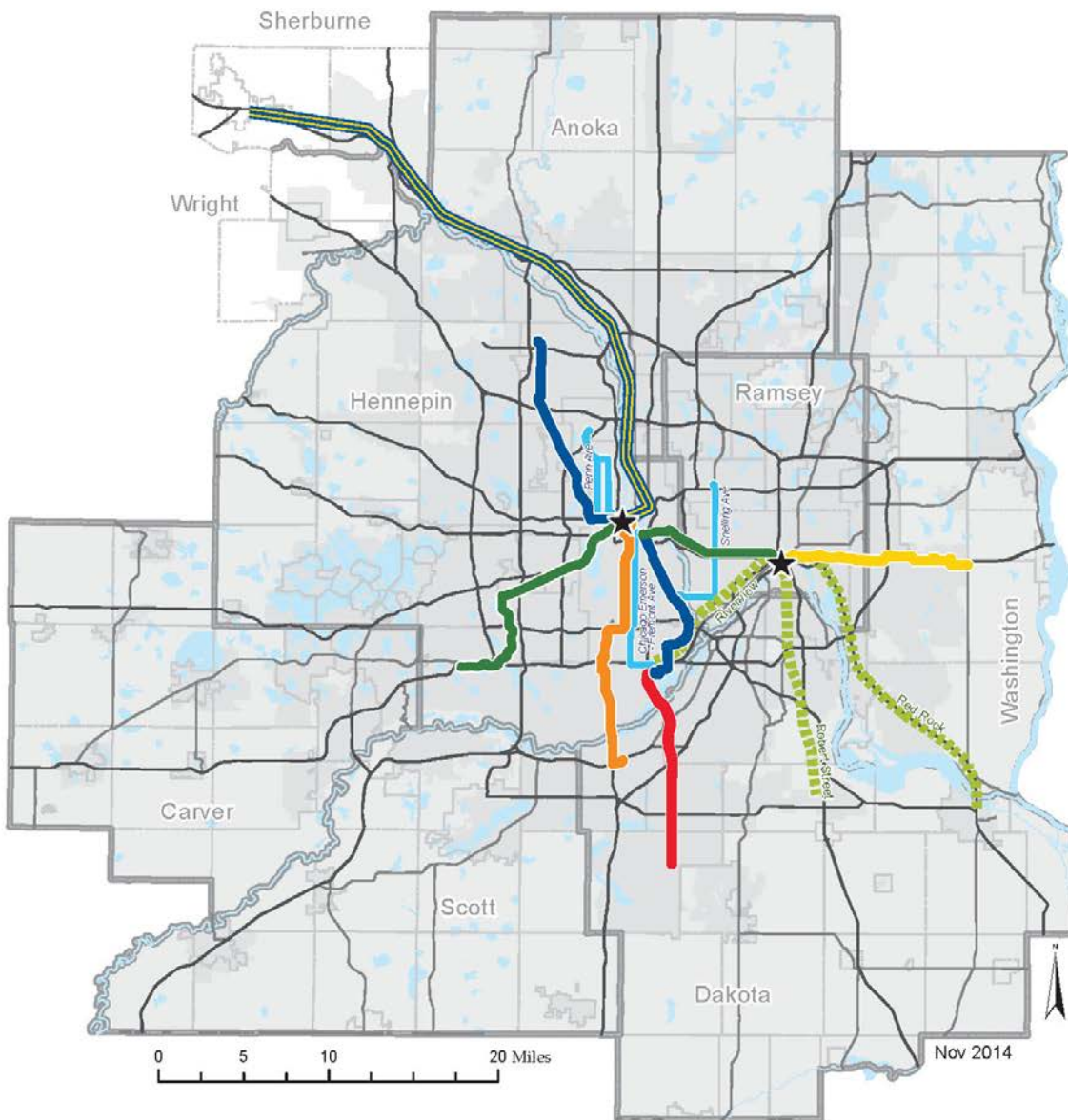


EXHIBIT 1.3-3
Regional Transitway System

LEGEND

Principal Arterial Highways	Northstar Line	Gold Line
Lakes and Rivers	Blue Line	Arterial BRT
City Boundary	Green Line	CTIB Phase I Program of Projects under study mode and alignment not yet specified
County Boundary	Red Line	★ Regional Multimodal Hub
2040 Urban Service Area	Orange Line	
MPO Area		



Source: Metropolitan Council, 2040 TRANSPORTATION POLICY PLAN | Version 1.00

	<p>Southwest LRT FINAL EIS Regional Transitway System Southwest LRT Project</p>	
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1.3.4 Land Use

Land use in the Corridor is diverse, with single-family residential as the predominant land use category (20 percent) and industrial is the second highest land use category (15 percent).⁵ Retail and other commercial uses (9 percent) and institutional (5 percent) are other notable land uses. A more detailed description of existing land uses in these communities is found in Section 3.1.2.1. Section 3.1.2.1 also describes planned land uses within each of the 16 proposed light rail station areas, some of which are located in the major employment centers noted below. It also identifies the local plans that support light rail in the transit corridor and transit supportive uses and densities surrounding the station areas.

1.3.5 Population and Employment

The 2010 (existing) population of the Project Corridor is 547,510 (229,974 households). In 2040, the population of the Corridor is expected to increase to 722,420, an increase of 32 percent from 2010. Exhibit 1.3-4 shows areas within the Project Corridor that are projected to have population increases of 25 and 50 percent between 2010 and 2040. Population in 2010 (actual), 2014 (estimate), and 2040 (forecast) for Eden Prairie, Minnetonka, Hopkins, Edina, St. Louis Park, and Minneapolis are reported in Table 1.3-1.

TABLE 1.3-1
Population – 2010 Actual, 2014 Estimate, and 2040 Forecast

Municipality	2010 Population (actual)	2014 Population (estimate)	2040 Population (forecast)
Eden Prairie	60,797	62,593	82,400
Minnetonka	49,734	51,144	61,500
Hopkins	17,591	18,971	19,900
Edina	47,941	50,261	53,000
St. Louis Park	45,250	47,933	51,300
Minneapolis	382,578	411,273	459,200

Source: <http://www.metrocouncil.org/Data-and-Maps/Data/Census-Forecasts-Estimates.aspx>

Employment in the Project Corridor is forecast to increase from 314,904 jobs in 2010 to 427,950 jobs in 2040, a 36 percent increase. Exhibit 1.3-5 shows areas within the Project Corridor that are projected to have employment increases of 25 and 50 percent between 2010 and 2040. The areas of predicted employment growth in the Corridor are similar to areas of predicted population increases; however, there are fewer areas with a predicted 50 percent employment growth rate than with a predicted 50 percent population growth rate. The west edge of the Project Corridor near the Hennepin County/Carver County line is the largest area in the Project Corridor that is expected to experience a 50 percent increase in population and employment.

Employment in 2010 (actual) and 2040 (forecast) for Eden Prairie, Minnetonka, Hopkins, Edina, St. Louis Park, and Minneapolis are reported in Table 1.3-2. The percent increase in employment for those cities varies from 15 percent in St. Louis Park to 47 percent in Hopkins.⁶ Minneapolis is and will continue to be the employment center in the region. It is home to 19 percent of the region's jobs, and suburban Hennepin County has another 34 percent of the region's jobs, for a total of approximately 850,000 jobs (Callaghan, 2015). Existing employment density (i.e., jobs per acre) in the vicinity of the existing METRO Green Line and METRO Blue Line and the proposed project (METRO Green Line Extension) is illustrated in Exhibit 1.3-6.

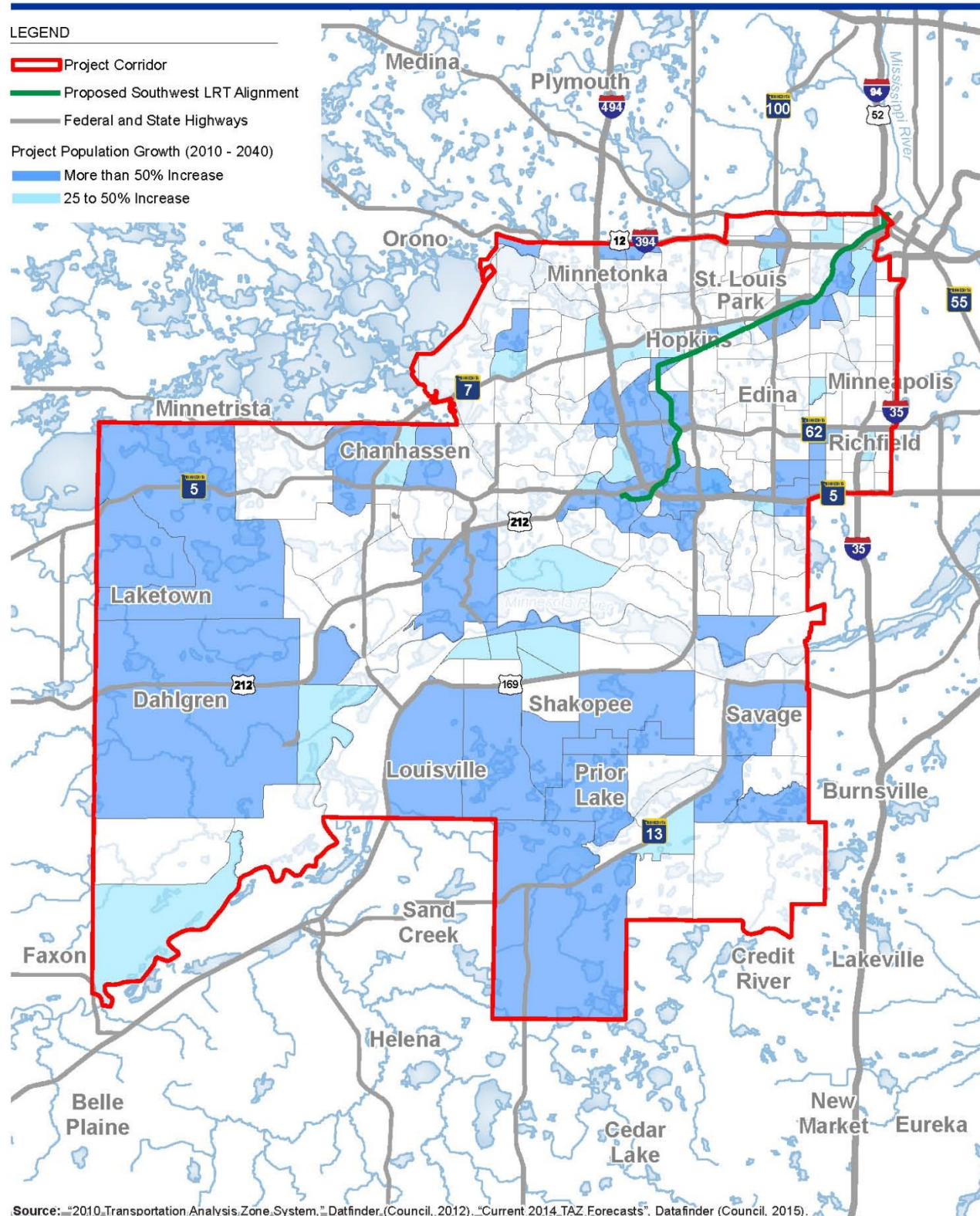
⁵ Land use percentages are from within the land use analysis study area, which is within a half-mile of the proposed stations.

⁶ Employment increases based on existing and future employment data provided by Metropolitan Council

<http://www.metrocouncil.org/Data-and-Maps/Data/Census-Forecasts-Estimates.aspx>.

EXHIBIT 1.3-4

Project Corridor Areas with Projected Population Growth of 25 and 50 Percent (2010 and 2040)



	Southwest LRT FINAL EIS Projected Population Growth Project Corridor		
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EXHIBIT 1.3-5

Project Corridor Areas with Projected Employment Growth of 25 and 50 Percent (2010 and 2040)

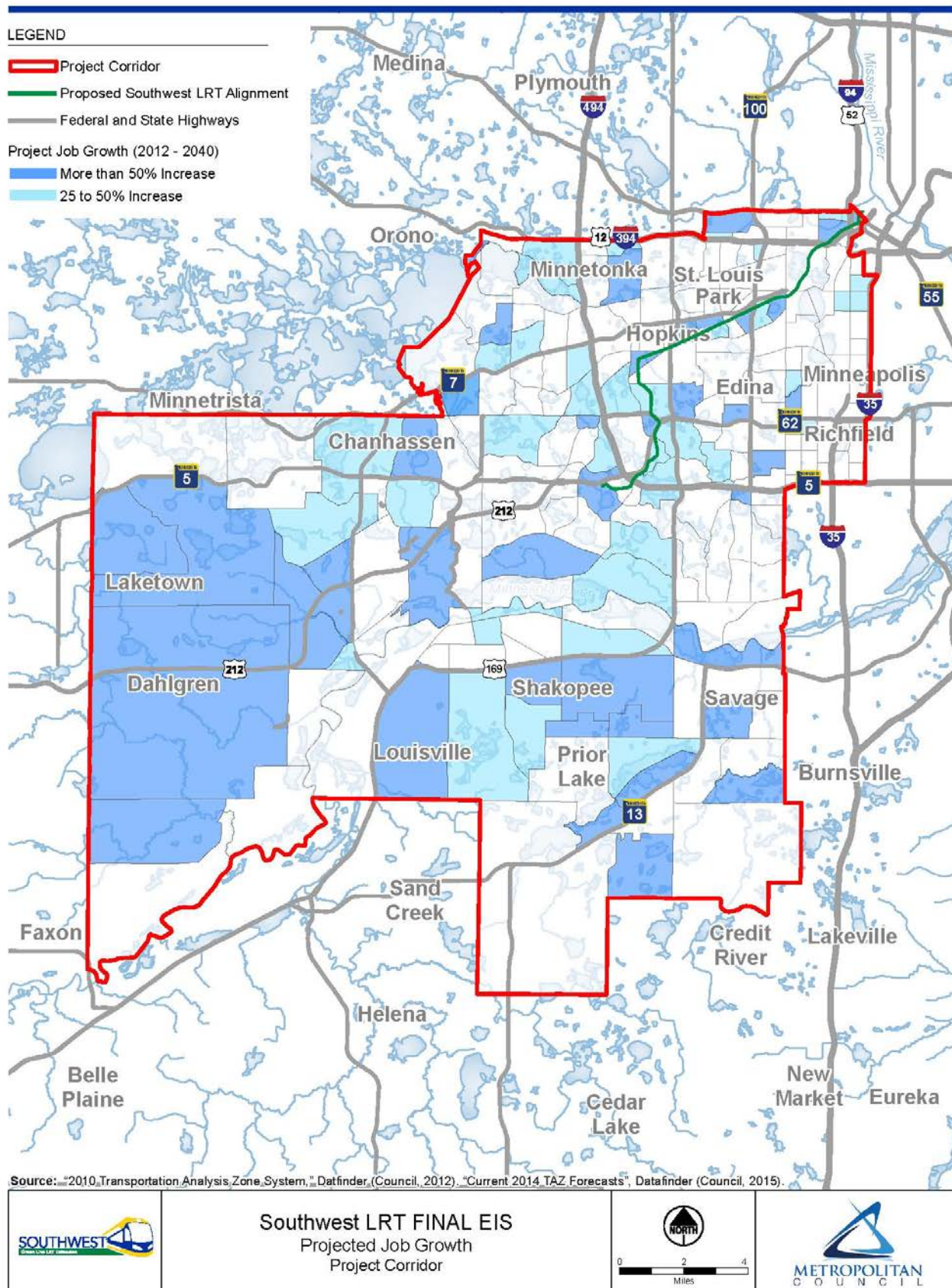
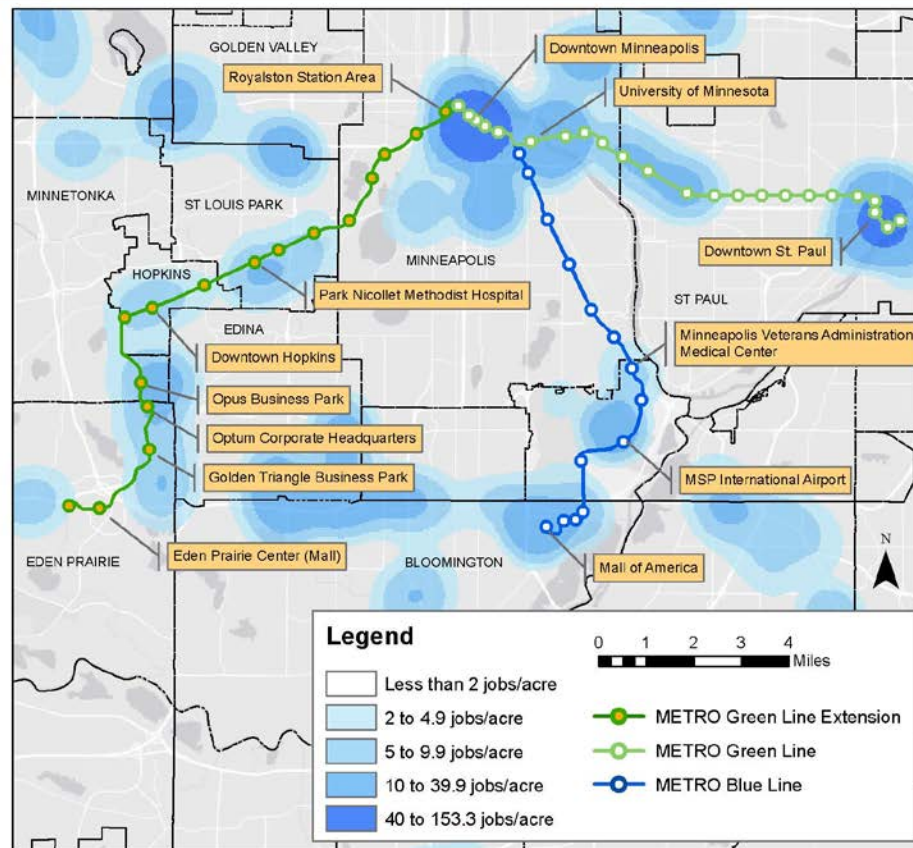


EXHIBIT 1.3-6

Existing Employment Density – Existing METRO Green Line and METRO Blue Line and the Project



	Southwest LRT FINAL EIS Access to Employment	
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TABLE 1.3-2

Employment – 2010 Actual and 2040 Forecast

Municipality	2010 Employment (actual)	2040 Employment (forecast)
Eden Prairie	48,775	66,600
Minnetonka	44,228	63,200
Hopkins	11,009	16,200
Edina	47,457	56,100
St. Louis Park	40,485	46,700
Minneapolis	281,732	350,000

Source: <http://www.metrocouncil.org/Data-and-Maps/Data/Census-Forecasts-Estimates.aspx>.

1.4 Declining Mobility

Within this section, declining mobility is defined as increased travel times and reduced travel time reliability. The Southwest LRT Corridor is and will continue to experience increasing levels of traffic congestion, as a result of strong residential and employment growth and limited funding for continued expansion of the region's principal arterial highway system. Future travel demand increases will not be adequately met by capacity improvements for either roadway or the current transit system. For example, the *Minnesota 20-Year State Highway Investment Plan (2013-2033)* (Minnesota Department of Transportation [MnDOT], 2013) shows that there is an unmet need for approximately \$12 billion in highway infrastructure projects between

2014 and 2022. In particular, no state transportation funding is available for highway mobility improvements after 2023 (Council, 2014b).

At the regional level, the Twin Cities metropolitan area has experienced population growth for several decades. While growth slowed between 2000 and 2010, largely due to national economic forces, the region gained 207,500 residents (Council, 2011). Between 2010 and 2040, the seven-county metropolitan area is projected to grow by 824,000 residents, a gain of 29 percent more than in 2010 (Council, 2014b). The regional growth is distributed across communities in the Project Corridor. According to *QuickFacts* by the U.S. Census Bureau, between 2010 and 2013, St. Louis Park, Hopkins, and Eden Prairie increased their populations between 2.5 and nearly 5 percent.⁷ Looking out to 2040, *Thrive MSP 2040* forecasts the region's urban center area will add 162,000 residents, a 19 percent increase over 2010 levels. The region's suburban area will add 159,000 residents, a 22 percent increase over 2010 levels.

With 1.6 million jobs, the seven-county Minneapolis-St. Paul region is the predominant economic center for Minnesota, western Wisconsin, the Dakotas, and Montana. Between 2010 and 2040, the region is projected to add 550,000 new jobs, an increase of 36 percent. Having surpassed one million jobs by 1980, the region is projected to surpass two million jobs by 2040 (Council, 2014b). The Council forecasts that the urban center area will add 142,000 jobs between 2010 and 2040 (a 25 percent increase over the three decades), and that the suburban area will add 161,000 jobs (a 43 percent increase).

As shown in Table 1.3.1, by 2040 the populations of Eden Prairie, Minnetonka, Hopkins, Edina, and St. Louis Park are forecast to grow by approximately 46,800 and the City of Minneapolis is forecast to grow by approximately 76,600 (Council, 2015a). As shown in Table 1.3.2, by 2040 the Cities of Eden Prairie, Minnetonka, Hopkins, Edina, and St. Louis Park are forecast to add approximately 53,200 jobs and the City of Minneapolis is forecast to add approximately 68,650 jobs (Council, 2015a).

Population and employment growth in Minneapolis and the Southwest Project Corridor and beyond is expected to result in growing travel demand and congestion. According to the 2040 Transportation Policy Plan (TPP) (Council, 2015e), between 2010 and 2040, daily vehicle trips are predicted to increase 28 percent to 9.8 million trips, and daily vehicle miles traveled are expected to increase 23 percent to about 90 million miles. According to the *Metropolitan Freeway System 2013 Congestion Report* (Metro District Office of Operations and Maintenance, 2014), approximately 20 percent of the miles of the Twin Cities urban freeway system experienced recurring congestion in 2013. MnDOT defines congestion as traffic flowing at speeds less than or equal to 45 miles per hour. Of the 302 miles of the freeway system that experienced congestion in the morning and evening peak travel periods, 189 miles are considered to experience severe (99 miles) and moderate (90 miles) congestion.

Congestion is forecasted to worsen by 2040. With the expected traffic increases caused by population and employment growth, the 2040 TPP states the result will be more intense and more extensive congestion on the region's trunk highways, county highways, and city streets by 2040. According to the Metropolitan Council Transportation Division, travel times from Eden Prairie to Minneapolis or St. Paul for cars are expected to increase by over 10 percent, from 30 minutes in 2000 to 34 minutes in 2040 during peak periods. According to the Institute of Transportation Engineers, the number and frequency of accidents increase with growing congestion, which would lead to continued degradation of highway travel time reliability. For example, an automobile trip during the p.m. peak hour from downtown Minneapolis or St. Paul to Eden Prairie is estimated to increase by approximately 9 percent and 15 percent by 2040, respectively, compared to existing conditions (changing from approximately 27.0 minutes to 29.5 minutes and from 35.3 to 40.7 minutes, respectively). Further, a reverse commute from Opus and Eden Prairie to North Minneapolis during the p.m. peak hour in 2040 is projected to increase by approximately 15 percent and 18 percent, respectively (changing from 25.7 minutes to 29.7 minutes and from 32.3 minutes to 38.3 minutes, respectively).

Average weekday transit ridership in the Corridor is projected to increase from approximately 56,900 in 2010 to approximately 94,300 in 2040 (under the No Build Alternative), a 66 percent increase. Over the

⁷ <http://www.census.gov/quickfacts>

same period, transit vehicle miles and hours traveled is projected to increase by 48 percent and 33 percent, respectively, which can result in increased crowding during peak periods. Higher-capacity transit vehicles, such as light rail vehicles, can more efficiently provide increased transit capacity, compared to buses. For example, the typical capacity of a bus is 42 passengers (seated and standing), compared to the capacity of a three-car light rail train, which typically has a capacity of approximately 558 passengers (seated and standing).

1.5 Limited Competitive, Reliable Transit Options for Choice Riders and Transit Dependent Populations including Reverse Commute Riders

Transit service between Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis is provided by Metro Transit, the largest transit provider in the region, and SouthWest Metro Transit. Metro Transit provides express, limited-stop, and local bus service to Minneapolis, St. Louis Park, Hopkins and Minnetonka. SouthWest Metro Transit provides express bus service between downtown Minneapolis and Eden Prairie.

Critical issues that affect the competitiveness and reliability of bus service connecting Eden Prairie, Minnetonka, Hopkins, and St. Louis Park with each other and Minneapolis are the characteristics of bus operations (e.g., orientation toward peak direction travel), congestion and a circuitous local road network. Despite the advantages of bus service in terms of flexibility and low capital cost, conventional urban bus operations often experience increased travel times and reduced reliability as they operate on congested streets. Buses operating in general purpose roadway lanes may be delayed not only by other vehicles and traffic signals, but also by frequent and time-consuming stops to pick up (passenger boarding time and fare collection) and discharge passengers. Illegal parking and delays caused when buses are traveling in the curb lane and a queue of right-turning vehicles can block buses from moving forward and are additional impediments to efficient bus service. On average, buses travel at only around 60 percent of the speeds of automobiles and other private vehicles using the same streets due to the cumulative effects of traffic congestion, traffic signals, and passenger boarding (Federal Transit Administration [FTA], 2011).

As described in Section 1.3, the geography of the Corridor and the Corridor's local freight rail and roadway network, particularly near downtown Minneapolis, makes it difficult to provide competitive bus travel times. Much of the roadway network through this area is circuitous due to geographic constraints, such as lakes and freight rail alignments, and there are several one-way street operations. Unlike streets on a standard grid, circuitous streets tend to require buses to frequently turn at intersections. Turning buses require slightly more intersection capacity. One-way street networks cannot only make it difficult for bus riders to locate stops for a return trip, but also traveling through one-way street systems often means taking a circuitous route, which adds distance to every trip (Jaffe, 2013).

Existing and future travel times for trips connecting Eden Prairie, Minnetonka, Hopkins, and St. Louis Park with each other and Minneapolis confirm the adverse effects of congestion and circuitous travel on reliable bus service as compared to private vehicle travel. Examples of existing (2010) and future (2040 No Build Alternative) average weekday bus and automobile travel times in the peak evening travel hour are found in Table 1.5-1.

TABLE 1.5-1
Peak Evening Total Automobile and Transit Travel Times in the Project Corridor (2010 and 2040)

Route	2010 Travel Times (minutes)		2040 Travel Times (minutes)	
	Automobile	Transit	Automobile	Transit
From Opus to North Minneapolis	25.7	91.0	29.7	97.3
From Eden Prairie to North Minneapolis	32.3	74.2	38.3	81.0
From Opus to Downtown Minneapolis	23.4	65.4	26.5	76.8
From Eden Prairie to Downtown Minneapolis	30.7	48.6	35.8	60.4
From Eden Prairie to West Lake Calhoun	20.0	73.1	23.6	83.8
From Downtown St. Paul to Eden Prairie	35.3	106.6	40.7	123.0
From Downtown Minneapolis to Eden Prairie	27.0	64.9	29.5	58.8

Source: Draft Travel Demand Methodology & Forecast, September 2015, Revision 4, Southwest LRT Project Technical Report. Minutes reported are in-vehicle time, plus transfer times for transit trips.

The frequency and direction of bus service also can affect the reliability and competitiveness of bus service that uses general purpose roadways. The current bus service between the Corridor's major activity centers and downtown Minneapolis is inbound (eastbound) from suburban areas during the morning peak period and westbound to the suburban areas during the evening peak period. Eastbound service to downtown Minneapolis is more frequent than the reverse commute service. For example, in Eden Prairie, which is served by SouthWest Transit, there are 35 express buses that provide service to downtown Minneapolis between 5:45 a.m. and 11:25 a.m. For reverse commuters, there are 10 westbound express buses leaving downtown Minneapolis for SouthWest Station between approximately 6 a.m. and 12:45 p.m. Bus service during the evening commute presents a similar situation; there are 39 express buses between downtown Minneapolis and Eden Prairie between 12:40 p.m. and about 10 p.m. However, there are only six eastbound express buses from Eden Prairie to downtown Minneapolis between 3:30 p.m. and 6 p.m.⁸

The people most affected by the limited bus service are those that do not own a vehicle for a variety of reasons, such as cost, environmental, health, or age. A notable number of people who depend on transit to meet their transportation needs reside in the Project Corridor's major activity centers. As noted in Table 1.5-2, 14 percent of households in the major activity centers do not own a vehicle. This is nearly double the metropolitan area average of eight percent. While Minneapolis drives up the percentage of households without a vehicle available, it is worth noting that Hopkins' percentage of households without a vehicle available is slightly higher than the metropolitan area average. The notable percentage of households without a vehicle available that live within the jurisdictions that will be served by the Project underscores the need for access to light rail transit.

In addition to households without vehicles available, seniors represent an important market segment for public transportation. In St. Louis Park, Hopkins, and Minnetonka, seniors make up a larger share of the population compared to the metropolitan area (Table 1.5-2). Further, senior populations are expected to grow in the metro area. The senior population in the Project's major activity centers supports the need for light rail transit.

TABLE 1.5-2
Transit-Dependent Population as a Share of Community Population

	Total Households	Zero Vehicles Available	Percent Zero-Vehicle	Total Population	Population 65 and over	Percent aged 65 and over
Corridor Communities	241,399	34,500	14%	564,896	54,026	10%
Minneapolis	165,438	30,064	18%	389,112	32,106	8%
St. Louis Park	21,716	1,541	7%	45,960	5,811	13%
Hopkins	8,124	1,248	15%	17,785	1,970	11%
Minnetonka	22,037	1,007	5%	50,523	8,656	17%
Eden Prairie	24,084	640	3%	61,516	5,483	9%
Metro Area	1,267,380	95,611	8%	3,265,409	365,733	11%

Source: 2009-2013 ACS five-year estimates; Table B08201 for zero-vehicle households; Table S0103 for 65 and older.

The problems that congestion poses for the competitiveness and reliability of bus transit can be seen in the Southwest Transitway Alternatives Analysis conducted by HCRRA (see *Southwest Transitway Scoping Summary Report*; HCRRA, 2009). The Southwest Transitway Alternatives Analysis compared the benefits, costs, and impacts of a range of transit alternatives (modes and routes) in the Corridor to identify the alternative that would best serve the needs of the communities. The alternatives analysis evaluated an enhanced bus alternative that includes two new limited-stop bus routes that would provide bi-directional service between Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and downtown Minneapolis. The limited-stop routes that were studied would have been aligned along existing Metro Transit and SouthWest Transit express bus routes using I-394, I-35W, Highway 169, and Highway 100 from Eden Prairie to downtown Minneapolis. This alternative also included minor modifications to the existing express bus service,

⁸ <http://swtransit.org/current-schedules/>

increased service frequencies, and restructured local bus service to provide better access along the limited-stop routes to key areas, including Golden Triangle and downtown Minneapolis.

The Enhanced Bus Alternative in the Alternatives Analysis was designed to be the “best that can be done” to improve transit service and mobility without modifications to the existing highway or roadway infrastructure in the corridor. The Enhanced Bus Alternative’s reliance on the regional road network, with its forecasted congestion levels, would have adversely affected the efficiency of this alternative. Travel demand modeling used to compare the light rail alternatives and the enhanced bus alternative found that the light rail alternatives had higher transit ridership and significant transit travel time benefits over the Enhanced Bus Alternative.

The Southwest Transitway Alternatives Analysis also evaluated two bus rapid transit alternatives that had alignments similar to the enhanced bus alternative. The bus rapid transit alternatives were eliminated from consideration because they did not meet the Project goals of improving mobility and providing a cost-effective, efficient travel option. The inability to improve mobility and be an efficient travel option speaks, in part, to the effects of congestion on the bus rapid transit alternatives. See Section 2.2 for additional information about the Project’s Alternatives Analysis process.

1.6 Need to Maintain a Balanced and Economically Competitive Multimodal Freight System

The Minneapolis-St. Paul Metropolitan Area is a focal point of the freight railroad system in the state and north central United States. Four of the country’s seven Class I railroads provide service to the Twin Cities, BNSF Railway, Union Pacific Railroad, CP Railway, and Canadian National. The Surface Transportation Board defines a Class I railroad as having annual carrier operating revenues of \$433.2 million or more as of 2011 after adjusting for inflation. Also operating in the metropolitan area are TC&W and Progressive Rail.

Minnesota has the eighth highest rail miles in the nation. Rail accounts for 25 percent of freight tonnage moving in the state, compared to trucks that move 63 percent of the freight tonnage. Moving freight via rail is especially important in moving bulk commodities, such as the minerals and agricultural products that help drive Minnesota’s economy (MnDOT, 2015c). Freight rail takes pressure off the state’s highway network and provides environmental benefits through fuel efficiency. Many of the state’s major industries rely on the rail system as a cost competitive way to deliver goods. For Minnesota, a strong rail system supports economic development, enhances environmental sustainability, helps to preserve the publicly owned roadway infrastructure, and increases the business marketability of the state.

Moving goods by freight rail rather than by truck can also have a positive effect on the region’s mobility. Twin Cities and Western Railway Company (TC&W) reports that an average train load equates to 40 trucks on the roadway system. As congestion increases on the roadway system, moving commodities by freight rail will become more competitive.

Beyond the importance of the freight rail system to industry, mining, and agriculture, it also has an important connection to passenger rail service and the state’s goal to increase service. The *2010 Minnesota Statewide Freight and Passenger Rail Plan* laid out a comprehensive plan for priority passenger rail corridors that overlap with, and would in part share, key freight rail tracks in the state. Demand for freight rail service across and within Minnesota has been increasing and, as a result, the ability for freight rail tracks to be used for passenger rail service may be adversely effected.

MnDOT developed the 2015 update to the *Comprehensive Statewide Freight and Passenger Rail Plan* (Minnesota State Rail Plan, 2015c) to guide the future of freight and passenger (intercity) rail systems and rail services in the state. The 2015 update builds upon the technical analyses and findings of the 2010 State Rail Plan, incorporates information between 2010 and 2015, and reflects the most current state of the system. Concerning freight rail, the 2015 update notes that a successful, viable rail industry that meets the future needs of the Minnesota economy requires continued investment and improvement to its infrastructure. It also notes that without rail, Minnesota businesses and consumers would not be able to access the products they need for everyday work and life.

The State Rail Plan's freight rail goals include:

- Continue to make improvements to the condition and capacity of Minnesota's primary railroad assets
- Address critical network bottlenecks
- Upgrade main line track (all Class I-III railroads) to 25 miles per hour minimum speed, as warranted
- Improve the network (all Class I-III railroads) to support the use of 286,000 pound railcars throughout
- Implement state of the art traffic control and safety systems
- Expand intermodal service access options throughout the state
- Continue to develop programs promoting safety of freight rail and hazardous material transportation

The State Rail Plan states that to meet current and future demand, improvements are needed in the freight rail network. It goes on to note that issues emerged during the development of the 2015 Minnesota State Rail Plan that will influence the Minnesota freight rail networks and services, including infrastructure constraints, rail facility and line relocation, intermodal services, positive train control, and hazard material transport.

Within the issue of rail facility and line relocation, the State Rail Plan states that, "In Hennepin County, the Twin Cities and Western Railroad currently operates freight rail service along the Kenilworth Corridor through the city of St. Louis Park and the city of Minneapolis, providing a connection into downtown Minneapolis. This alignment was chosen as the locally preferred alternative for the METRO Green Line Extension Project. After several years of discussion and public engagement, full municipal consent was provided by all municipalities for a plan to build a tunnel for the METRO Green Line tracks in the Kenilworth Corridor." It is important that any freight rail modifications to be included in the Project be done in a way that helps to maintain the state's balanced and economically-competitive freight rail system.

1.7 Regional and Local Planning for Light Rail Expansion

The long-range comprehensive plan for the Twin Cities region, *Thrive MSP 2040*, and region's long-range transportation plan, the *2040 Transportation Policy Plan* (2040 TPP) call for continued investment in a system of regional transitways, including the Southwest LRT Project and other light rail transit, bus rapid transit, and arterial bus rapid transit projects. In particular, the Southwest LRT Project is included within the current revenue assumptions of the plans. As described in the 2040 TPP, the region's investment policy includes land use development expectations to leverage and support transit investments, identifying cost-effective means of improving multi-modal access to regional destinations, and improving mobility and reliability on the regional highway system, especially when it benefits movement and accessibility for freight, transit, carpools, and MnPASS users.

Also as noted in the 2040 TPP, the existing regional growth pattern and funding limitations do not make it possible to expand the highway system in a sustainable way to address such issues as congestion, climate change, equity, and livability. Within the last decade, a marked increase in the value of locations in proximity to job concentrations and high-quality transitways has elevated the pace of private investment in the already-developed parts of the region. The evidence is visible along the METRO Blue Line LRT, which has been operating since 2004, the Northstar Commuter Rail (2009), the METRO Red Line BRT (mid-2013), and the METRO Green Line LRT (mid-2014). Development interest and higher-intensity land use are also showing up along proposed transit investments. On the local level, higher-intensity development and redevelopment is occurring throughout the region's already developed areas and requires support with a multimodal network of local and collector streets, sidewalks, and bicycle paths. Development can best support multimodal travel when communities plan their land use with knowledge of travel behavior and transportation infrastructure. Consistent with the land use policies identified in *Thrive MSP 2040*, this means supporting growth, particularly job growth, where job concentrations exist or in nodes along regional transportation corridors, either highway or transit.

Beyond Metropolitan Council documents, *Hennepin County's 2030 Transportation Systems Plan* and the *Hennepin County 2030 Comprehensive Plan* include the Southwest LRT Project as a transitway recommendation, and the five cities the proposed light rail alignment will pass through have land use and infrastructure plans for the proposed light rail stations to be located in their communities. See Section 3.1.2.2

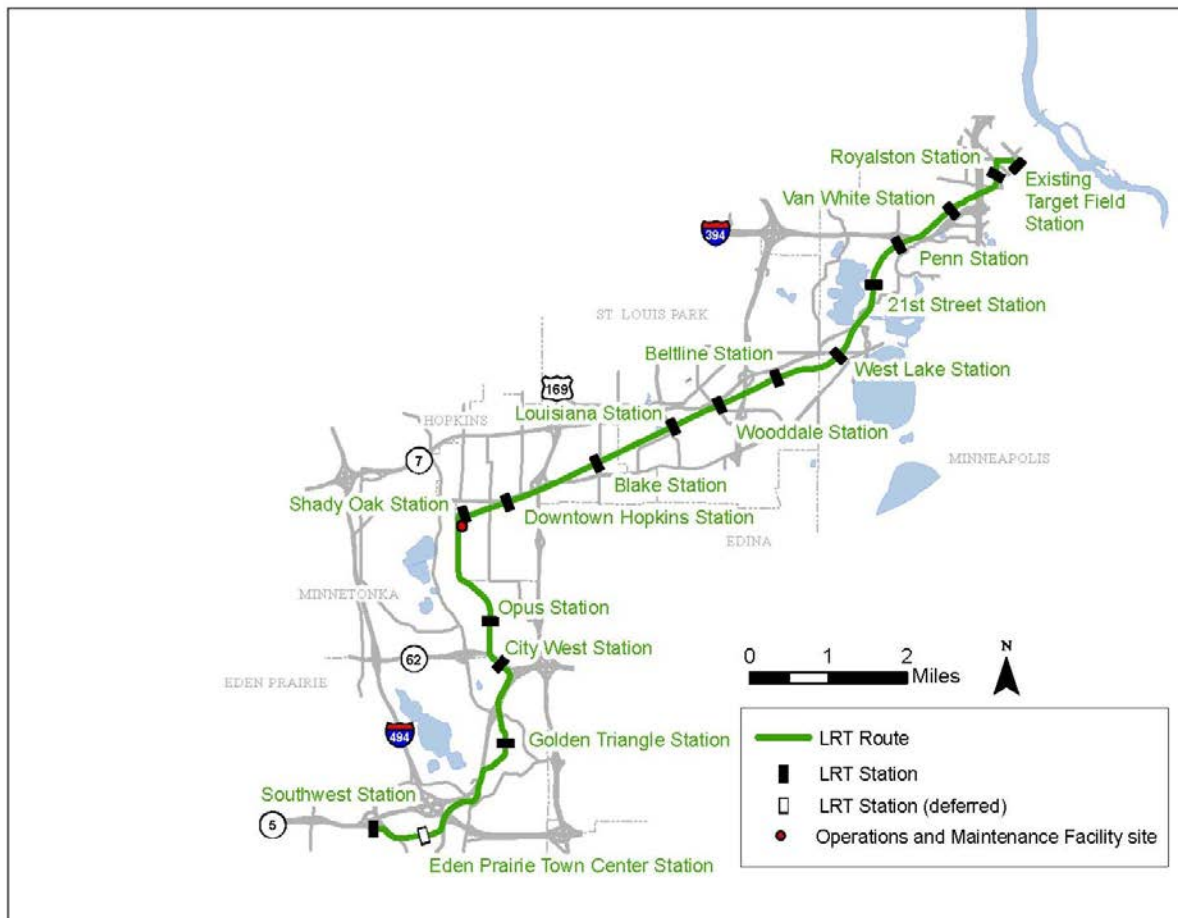
for a summary of the state, regional, and local planning documents that support light rail transit in the Project Corridor. Section 3.1.3.1 evaluates the degree to which light rail transit would be compatible with or supportive of a wide range of land use, development, and transportation plans in the region.

2 Alternatives Considered

This chapter describes the alternatives evaluated in the Southwest Light Rail Transit (LRT) Project Final Environmental Impact Statement (EIS). The Southwest LRT (METRO Green Line Extension) is approximately 14.5-miles of new double-track proposed as an extension of the METRO Green Line (Central Corridor LRT), which will operate from downtown Minneapolis through the communities of St. Louis Park, Hopkins, Minnetonka, and Eden Prairie, passing in close proximity to Edina (see Exhibit 2.1-1). The No Build Alternative includes all transportation projects included in the financially constrained Transportation Policy Plan (TPP), except for the Southwest LRT Project (the Project).

EXHIBIT 2.1-1

Proposed Southwest LRT Alignment



This chapter includes the following sections:

- 2.1 Definition of Alternatives
- 2.2 Alternatives Previously Considered
- 2.3 Capital Cost Estimates
- 2.4 Operating and Maintenance Cost Estimates

This chapter first defines the alternatives that are evaluated within this Final EIS, focusing on the alternatives' proposed capital improvements and transit operating plans. This definition of alternatives (including Appendix E) forms the basis of the environmental and related analyses included in the remaining chapters of this Final EIS. Second, this chapter describes the steps that were used to identify the alternatives evaluated within this Final EIS, ranging from the Project's initial Alternatives Analysis, through selection of

the Locally Preferred Alternative, Scoping, and publication of the Draft EIS and Supplemental Draft EIS, concluding with design adjustments made by the Council in July 2015. Finally, this chapter summarizes the base year capital and operating costs of the Project. These base year costs, when escalated into year-of-expenditure costs and accounting for finance costs, are used within the Project's finance plan (see Chapter 7).

2.1 Definition of Alternatives

The alternatives considered in this Final EIS were developed through a National Environmental Policy Act of 1969 (NEPA)/Minnesota Environmental Policy Act (MEPA) environmental process that began with scoping in 2008. This Final EIS examines the impacts of the following:

- The LRT Project**, which includes the **LPA** and **Locally Requested Capital Investments (LRCIs)** (see Sections 2.1.3, 2.1.1, and 2.1.2, respectively). The LPA is approximately 14.5 miles of new double track proposed as an extension of the METRO Green Line (Central Corridor LRT) that will allow for the co-location of freight rail and light rail in the Kenilworth Corridor (i.e., LRT 3A-1). Exhibit 2.1-1 includes a depiction of the proposed Southwest LRT Alignment. The proposed alignment includes 16 new light rail stations¹ (including the Eden Prairie Town Center Station that is deferred for construction at a later date), approximately 2,500 additional park-and-ride spaces, accommodations for passenger drop-off, bicycle and pedestrian access, as well as new or restructured local bus route connection stations to nearby residential, commercial, and education destinations. Major activity centers from Eden Prairie to St. Paul, including UnitedHealth Group campuses, the Opus/Golden Triangle employment area, Park Nicollet Methodist Hospital, the Minneapolis Chain of Lakes, downtown Minneapolis and St. Paul, the University of Minnesota, and the State Capitol area, will be accessible by a one-seat ride. Passengers will be able to connect to the greater METRO system, including METRO Blue Line (Hiawatha LRT), METRO Orange Line (I-35W BRT), Northstar Commuter Rail, METRO Red Line (Cedar Avenue Bus Rapid Transit [BRT]) via Blue Line, and the planned METRO Blue Line Extension (Bottineau LRT), as well as future commuter rail and planned Arterial BRT lines connecting at multiple locations on the METRO system. The LRCIs include proposed projects related to roadway, streetscape/landscape/aesthetic improvements, pedestrian/bicycle improvements, utilities, and guideway profile. Preliminary Engineering Plans of the Project and lists of transit, roadway and pedestrian/bicycle improvements and LRCIs can be found in Appendix E.
- The No Build Alternative** represents future conditions without the Project. The No Build Alternative represents the existing transportation system with all planned transportation improvements included in the Current Revenue Scenarios (i.e., financially constrained) of the 2040 TPP (adopted January 2015), except for the SouthWest LRT Project LPA. The No Build Alternative represents both a possible outcome of this Final EIS process, as well as a reference point to gauge the benefits, costs, and impacts of the Project. NEPA/MEPA processes require consideration of the No Build Alternative.

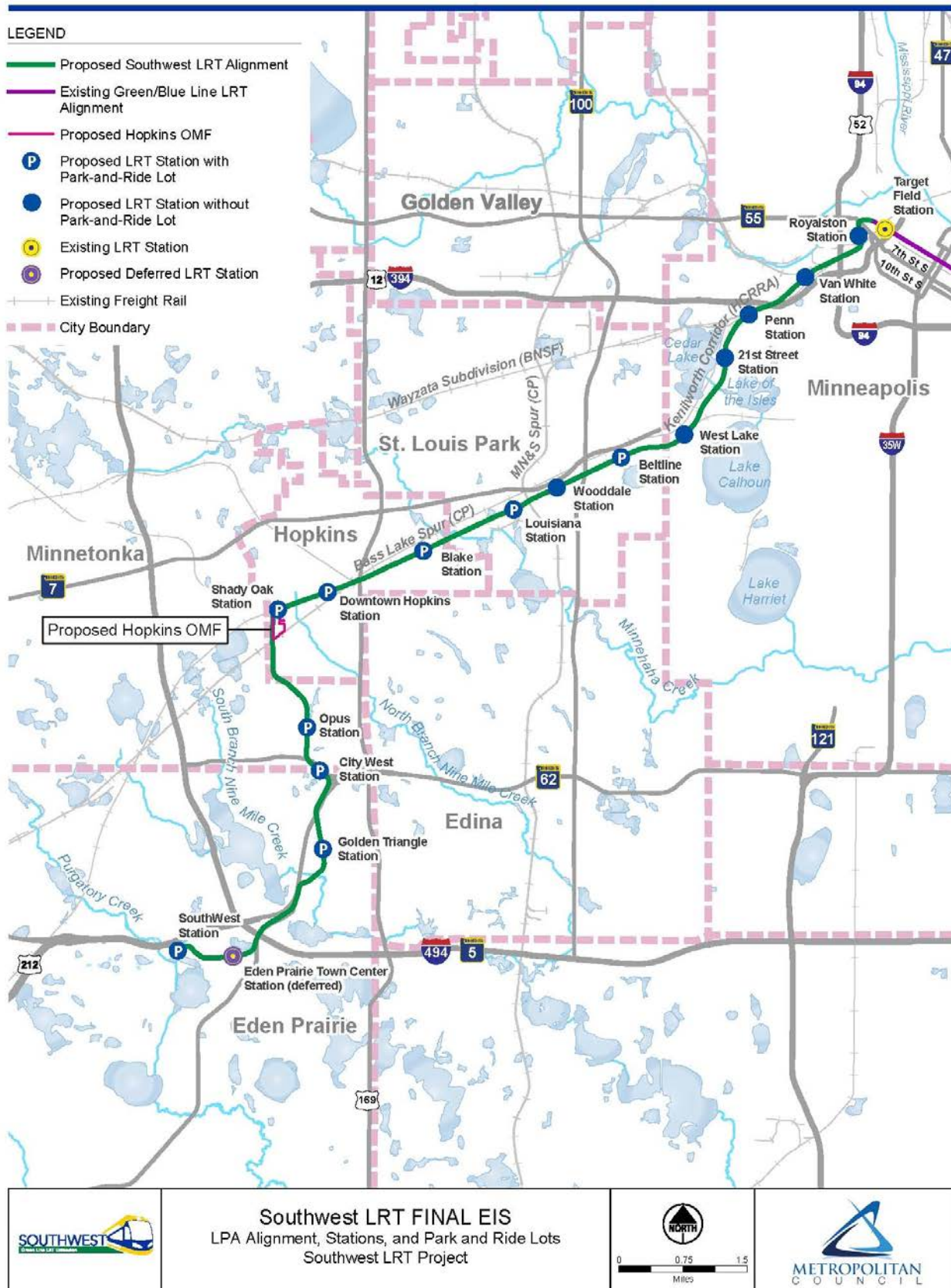
2.1.1 Locally Preferred Alternative

This section describes the major features of the LPA, including capital improvements, construction activities, and transit operations. Exhibit 2.1-2 depicts the proposed LPA alignment, stations, and park-and-ride lots. This section first describes the full range of light rail-related capital improvements included within the LPA, with the retention of freight rail in the Kenilworth Corridor (LRT 3A-1), followed by a description of transit operating characteristics under the LPA. Subsection 2.1.1.1 describes LPA capital improvements. Subsection 2.1.1.2 summarizes construction activities related to the LPA. Subsection 2.1.1.3 discusses transit operations to be included as part of the LPA.

¹ See the Project Nomenclature for a listing of the station names used in this Final EIS, compared to the official station names adopted by the Council on February 24, 2016. In particular, following are four of the station names used in the Final EIS, compared to their official names, respectively: Royalston Station = Royalston Avenue/Farmers Market Station; Van White Station = Bassett Creek Valley Station; Penn Station = Bryn Mawr Station; and 21st Street Station = West 21st Street Station.

EXHIBIT 2.1-2

LPA Alignment, Stations, and Park-And-Ride Lots



2.1.1.1 Capital Improvements

This section describes the capital improvements that will comprise the LPA. Capital improvements for the LPA will include:

- Light rail alignment
- Light rail stations, park-and-ride lots, and bus improvements
- Light rail operations and maintenance facility
- Light rail ancillary facilities
- Transit vehicles
- Roadway improvements
- Bicycle and pedestrian improvements
- Freight rail modifications

A. Light Rail Alignment

This subsection describes the light rail alignment to be included in the LPA (generally from southwest to northeast). Under the LPA, the new light rail extension of the existing METRO Green Line will have a western terminus in Eden Prairie at the proposed SouthWest Station, and move through Minnetonka, Hopkins, and St. Louis Park on its way to a connection with the existing METRO Green Line at the existing Target Field Station in Minneapolis. Exhibit 2.1-2 provides a general illustration of the light rail alignment described in this section, and Appendix E provides the more detailed Preliminary Engineering Plans of the light rail alignment.

Eden Prairie

The line's southwestern terminus will be the proposed SouthWest Station in Eden Prairie. The light rail station will be at-grade within SouthWest Transit's existing SouthWest Station. The light rail alignment will begin an ascent from the light rail station onto a new light rail bridge that will first run parallel to Prairie Center Drive and then cross over Technology Drive and Prairie Center Drive. After crossing Prairie Center Drive, the light rail alignment will continue east at-grade to the proposed at-grade Eden Prairie Town Center Station.²

After the proposed Eden Prairie Town Center Station, the light rail alignment will remain at-grade as it passes south of Lake Idlewild and meets up with Eden Road. The alignment will run parallel to and north of Eden Road, heading east and then turning north at Flying Cloud Drive to cross Technology Drive at-grade. The alignment will follow Flying Cloud Drive, crossing over I-494 on a new light rail bridge, parallel to and west of the existing Flying Cloud Drive bridge over I-494. After crossing I-494, the light rail alignment will continue northeast on the north side of Flying Cloud Drive. The light rail alignment will cross Valley View Road and a Highway 212 off-ramp and on-ramp on a new light rail bridge. After the bridge, the light rail alignment will continue north at-grade on the east side of Highway 212. After passing existing development between Highway 212 and Flying Cloud Drive, the alignment will cross Nine Mile Creek and Flying Cloud Drive on a new light rail bridge. After the bridge, the alignment will continue north at-grade, entering generally undeveloped land within a business park at-grade, crossing West 70th Street at-grade and connecting to the proposed at-grade Golden Triangle Station.

Upon leaving the Golden Triangle Station, the light rail alignment will be grade separated on a light rail bridge that will cross Flying Cloud Drive, Shady Oak Road, and Highway 212. The bridge will slowly drop to grade on the western side of the Shady Oak Road off-ramp from Highway 212 North. The light rail bridge will continue to follow Highway 212 to Highway 62 at-grade, where it will turn west to the proposed City West Station. The proposed City West Station will be at-grade along West 62nd Street.

² The Eden Prairie Town Center Station and associated roadway improvements are deferred and is not expected to be in place when the Project opens in 2020. The station and associated roadway improvements are planned to be in place by 2040. Appendix E illustrates the Project with and without the Eden Prairie Town Center Station and associated roadway improvements.

Minnetonka

Leaving City West Station, the light rail alignment will extend north within a proposed cut-and-cover tunnel under Highway 62. The tunnel will end at the intersection of Red Circle Drive and Yellow Circle Drive, where the alignment will continue north at-grade, crossing Yellow Circle Drive and Bren Road East at grade and connecting to the proposed at-grade Opus Station. At the proposed Opus Station, the light rail alignment will continue north at-grade, crossing Bren Road West at grade and continuing through undeveloped land, and then passing between existing commercial and housing developments. The light rail alignment will turn northwest and cross under Feltl Road and Smetana Road within a grade-separated crossing. The light rail alignment will head directly north between undeveloped land and existing housing developments. The light rail alignment will be located on an approximately 3,000-foot long new bridge that will cross wetlands and an existing freight rail alignment. After crossing the freight rail alignment, the light rail alignment will descend to grade, with connections to the proposed Hopkins Operations and Maintenance Facility (OMF), which will be located immediately east of the light rail alignment. The light rail alignment will extend north, crossing 5th Street South/K-Tel Drive at-grade, before connecting to the proposed at-grade Shady Oak Station.

Hopkins

After the proposed Shady Oak Station, the at-grade light rail alignment will turn to the east, where it will meet up with the junction of Minnesota River Bluffs Regional Trail and the Cedar Lake LRT Regional Trail. The at-grade light rail alignment will be located southeast of the trail and will follow the trail northeast, crossing 11th Avenue South at-grade and connecting to the proposed Downtown Hopkins Station at Excelsior Boulevard and 5th Avenue South. At the Downtown Hopkins Station, the light rail alignment will continue to follow Excelsior Boulevard at-grade until it reaches the alignment intersection with Excelsior Boulevard. The light rail alignment will then follow the trail at-grade to the proposed Blake Station on Blake Road North. A light rail bridge over Excelsior Boulevard will be constructed to allow for the light rail alignment to be located south of the Canadian Pacific (CP) Bass Lake Spur freight tracks (i.e., the freight rail tracks will be located north of the light rail tracks and the Cedar Lake LRT Regional Trail located north of the freight rail tracks).

St. Louis Park

The light rail alignment will follow the Cedar Lake LRT Regional Trail and CP Bass Lake Spur for several miles at-grade, crossing Minnehaha Creek, Louisiana Avenue South, Xenwood Avenue South, and Highway 100 on new light rail bridges. The light rail alignment will pass through the following stations:

- Louisiana Station at Louisiana Avenue South and Oxford Street
- Wooddale Station at Wooddale Avenue South and West 36th Street
- Beltline Station at Beltline Boulevard and Park Glen Road

To reach the proposed Louisiana Station, the light rail alignment will curve slightly to the south, closer to Oxford Street and off the existing embankment. Immediately east of the station, the light rail alignment will continue east, under the proposed freight rail Southerly Connector, and back up onto the existing embankment.

Minneapolis

Continuing west of and parallel to the Cedar Lake LRT Regional Trail, the light rail alignment and Kenilworth Corridor freight rail tracks will stay at-grade within the Kenilworth Corridor to the proposed at-grade West Lake Station at South Chowen Avenue, south of and below West Lake Street. Leaving West Lake Station, the light rail alignment will travel under West Lake Street, then begin a grade-separated descent into a shallow cut-and-cover tunnel. For just under one-half mile, the light rail alignment will be located in this shallow tunnel, from approximately 400 feet north of West Lake Station and returning to grade approximately 500 feet south of the Kenilworth Lagoon. The alignment will continue north at-grade and in the Kenilworth Corridor (crossing the Kenilworth Lagoon on a new light rail bridge), until it reaches the proposed at-grade 21st Street Station. Continuing north at-grade, the light rail alignment will cross West 21st Street and the

Cedar Lake Trail at-grade. Immediately north of the at-grade trail crossing, the light rail alignment will connect to the proposed Penn Station, which will be at-grade and located south of I-394 and South Penn Avenue.

Continuing north at-grade, the light rail alignment will cross under I-394, diverging slightly northwest from the trail alignment to run parallel to and east of existing BNSF Wayzata Subdivision freight rail tracks. The light rail alignment will connect to the proposed Van White Station at-grade immediately west of and under the existing Van White Memorial Boulevard bridge. The light rail alignment will continue to run parallel to and between the freight rail tracks and the Cedar Lake Trail. The light rail alignment will continue over a new light rail bridge for approximately 900 feet, crossing Glenwood Avenue at-grade. Continuing on that 900-foot long bridge, the light rail alignment will cross over the BNSF Wayzata Subdivision and then cross the intersection of Royalston Avenue North and Holden Street at-grade, after which the at-grade alignment will continue north, parallel to and east of Royalston to the proposed at-grade Royalston Station. After Royalston Station, the light rail alignment will extend north and then east, crossing over North 5th Avenue and North 7th Avenue on a new light rail bridge that will be generally located parallel to and south of north 5th Avenue. The light rail bridge will join the existing METRO Green Line light rail alignment immediately west of the existing Target Field Station.

B. Light Rail Stations, Park-and-Ride Lots, and Bus Improvements

Under the LPA, the proposed light rail alignment from Eden Prairie to Target Field will have 16 light rail stations (including the Eden Prairie Town Center Station that is deferred for construction at a later date). The west terminus will include a light rail station at the existing SouthWest Station and will extend to the east terminus of the light rail alignment, connecting to the existing METRO Green Line immediately west of the existing Target Field. Major elements that will be incorporated onto the platforms include shelters, lighting, furniture, and fencing and railing. All stations will include accessible connections to local street networks and sidewalks. Table 2.1-1 lists the light rail stations by jurisdiction, including information on park-and-ride lots and bus improvements. Appendix E illustrates the stations, park-and-ride lots, and bus improvements described in the table. Chapter 4.3 includes detailed information regarding parking.

C. Light Rail Operations and Maintenance Facility

The LPA will include an OMF within the City of Hopkins, referred to as the Hopkins OMF. Exhibit 2.1-3 provides illustrations of the OMF site. The proposed Hopkins OMF will be located approximately 1,000 feet south of the proposed Shady Oak Station. The Hopkins OMF will be located within existing office/warehouse and light manufacturing development land use. The proposed Hopkins OMF will occupy an approximately 15-acre site between the CP Bass Lake Spur to the south, 5th Street South/K-Tel Drive to the north, just east of 16th Avenue South on the east, and the proposed LRT mainline to the west.

The proposed Hopkins OMF will include the closure of 16th Avenue South, which is in the middle of the proposed site, between K-Tel Drive and 6th Street South. In addition, a cul-de-sac will be constructed on 6th Street South and at 5^{1/2} Street, immediately east of the former 16th Avenue South alignment. Automobile and truck access to the OMF site will be provided on the existing roadway network via 5th Street South, K-Tel Drive, and 15th Avenue South. Light rail transit vehicles will access the proposed OMF site via the inbound tracks of the light rail alignment. Inbound light rail trains will access the site directly from the inbound tracks. Outbound light rail trains will access the OMF by crossing over to the inbound tracks south of 5th Street, and enter the OMF site via the inbound tracks.

In general, light maintenance activities and the storage of vehicles not in service will occur within enclosed structures, although some maintenance activities, including moving vehicles between functional areas within the OMF, will occur outside of buildings. Activities on the site will include washing, routine cleaning, routine maintenance, and inspections of the trains; parts storage; and maintenance-related office functions. The proposed OMF site will be in operation 24 hours a day, 365 days a year. The site will include a network of light rail switching track, an approximately 110-space surface parking lot for employees and visitors, storage and maintenance of nonrevenue vehicles, and office space for employees. The light rail vehicle (LRV) storage barn will include five storage bays (with six vehicles per bay) to accommodate a total of 30 vehicles. The storage barn will be designed to accommodate future expansion, which includes a sixth storage bay on the

TABLE 2.1-1

LPA: Proposed Light Rail Stations and Related Park-and-Ride Lots and Bus Improvements

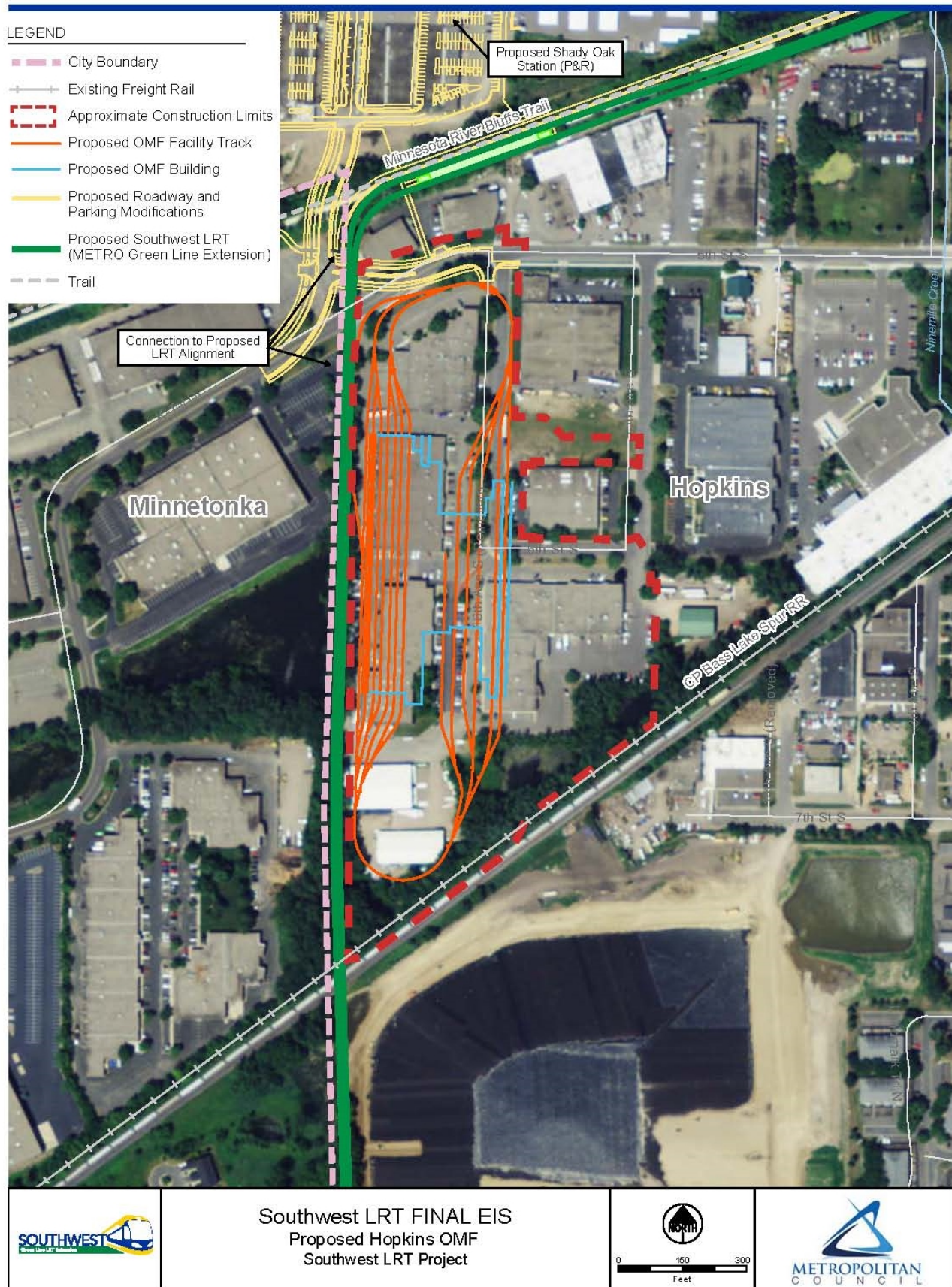
Stations by City	Park-and-Ride Lots	Bus Improvements
Eden Prairie		
SouthWest	450 parking spaces – structured (shared vehicular connections with the existing SouthWest park-and-ride lot)	SouthWest Transit currently provides bus service in and out of the SouthWest Station. The Project's SouthWest Station will be located adjacent to the passenger waiting area, which will be moved to the west and there will be other modifications to existing bus facilities accommodating transfers between buses and light rail platforms at the SouthWest Station.
Eden Prairie Town Center ^a	None	None
Golden Triangle	200 spaces – surface (a portion leased)	New bus shelter, bus stop, and bus operator facility; SouthWest Transit has proposed to provide local circulator bus routes.
City West	160 spaces – surface	None
Minnetonka		
Opus	80 spaces – surface (leased)	Bus stops and related facilities
Hopkins		
Shady Oak	700 spaces – surface	None
Downtown Hopkins	190 spaces – structured	Bus stops and related facilities
Blake	89 spaces – surface	Bus stops and related facilities
St. Louis Park		
Louisiana	350 spaces – surface lot	Bus stops and related facilities
Wooddale	None	Bus stops and related facilities
Beltline	268 spaces – surface lot	Bus stops and related facilities
Minneapolis		
West Lake	None	Bus stops and related facilities: 1) improvements to South Chowen Avenue, West 31st Street, and Abbott Avenue South that will accommodate bus connections between Excelsior Boulevard and the station, and connections to bus stops on West Lake Street; 2) an additional bus stop and layover will be located on Abbott Avenue/Chowen Avenue east of the West Lake station platform; 3) new bus stops on West Lake Street bridge, with elevators connecting to the station below and improved sidewalks along West Lake Street
21st Street	None	Bus stops and related facilities
Penn	None	None (station will be served by Route 26)
Van White	None	Bus stops and related facilities
Royalston	None	Bus stops and related facilities

^a The Eden Prairie Town Center Station has been deferred for construction until after initial construction of the Project.

Source: Appendix E.

EXHIBIT 2.1-3

Proposed Hopkins OMF



west side of the facility to accommodate total of 36 vehicles (adequate land exists for the expansion). Heavy maintenance of the Project's LRVs, which will include wheel truing and major body repair and painting, will occur at the Franklin Street OMF, which is outside of the project vicinity and will not need to be expanded to accommodate the Project's LRV fleet.

D. Light Rail Traction Power Substations and Signal Bungalows

The LPA will require facilities to provide signaling and power to the light rail alignment and LRVs. Active devices, such as traffic signals, railroad-type flashers, and bells, are proposed to control traffic at locations where the light rail alignment will cross public streets. Signal bungalows are small sheds that house the equipment to operate and monitor the signals that regulate train movement on the alignment. In addition to the signal bungalows will be traction power substations (TPSS) that will be located on parcels of property approximately 80-foot by 120-foot. TPSS provide power for the light rail vehicles through the overhead wire system and will be completely enclosed and perimeter fencing. The LPA includes 20 proposed TPSS sites and 25 proposed signal bungalow sites, which were determined through consultation with the applicable local jurisdictions. Appendix E lists and illustrates the proposed TPSS and signal bungalow sites along the proposed light rail alignment.

E. Transit Vehicles

The LRVs for Southwest LRT will be similar to those for the existing METRO Green Line (see example in Exhibit 2.1-4), which are Siemens S70 LRVs. The LRVs will be designed to operate independently or to be coupled and operated as multiple-unit train sets of up to three vehicles. The Southwest LRT Project includes purchase of 27 additional LRVs (adding 24 vehicles into service and three vehicles as spares). The cost per vehicle was approximately \$3.3 million. Existing METRO Green Line trains accommodate 230 passengers per car (i.e., 68 seated and 132 standing). A pantograph located on the roof of the LRV collects power from the overhead catenary wires. Each car is equipped with level boarding for Americans with Disability Act (ADA) accessibility and can accommodate bicycles. LRV speeds will generally range from approximately 20 miles per hour (mph) to 65 mph, except for entry and exit from station areas and inside the Hopkins OMF.

F. Roadway Improvements

The LPA will require long-term changes to the surrounding area by altering the geometry or operational function of roadways. These changes to roadways are needed under the LPA due to either: (1) accommodate the introduction of the light rail alignment and related facilities; or (2) increase roadway capacity to respond to anticipated demand to use of one or more roadways at a specific locations (e.g., in response to new park-and-ride demand at a new park-and-ride lot).³ Appendix E illustrates and lists the roadway improvements that will occur under the LPA. Chapter 4.2 includes detailed information regarding changes to roadways and traffic.

G. Bicycle and Pedestrian Improvements

Under the LPA, there will be a variety of bicycle and pedestrian improvements, which are illustrated and listed in Appendix E. In general, those improvements will be made to provide safe bicycle and pedestrian crossings of the proposed light rail alignment, to accommodate the proposed light rail and roadway improvements, and/or to provide bicycle and pedestrian connections to the proposed light rail stations. These improvements will affect several trails and sidewalks within the vicinity of the Project. Section 4.5 includes additional information regarding the pedestrian and bicycle system.

³ The Project includes intersection modifications, new traffic signals, changes to existing traffic signals, and other traffic management techniques at intersections and at-grade light rail crossings of roadways within the roadways and traffic study area, so that the Project will not cause an unacceptable level of congestion, or worsen traffic operations at intersection that already experience an unacceptable level congestion compared to the 2040 No Build Alternative. Congestion is defined in terms of level of service (LOS). The Project will: (1) generally provide intersection operations of LOS D or better; or (2) when the 2040 No Build Alternative LOS would be E or F, provides intersection operations that will be the same as or better than the No Build Alternative. See Section 4.2 for additional information.

EXHIBIT 2.1-4

Light Rail Vehicle Example



Source: Council

2.1.1.2 Construction Activities

The construction of the LPA will be a major undertaking that will require changes along the proposed light rail alignment for the duration of the construction period. Major construction is expected to span approximately three years. The description of construction activities for the LPA in this section is based on the Preliminary Engineering Plans (see Appendix E). Construction practices, staging, phasing, and approaches will continue to be refined as the Council advances the design and constructs the LPA. Chapters 3 and 4 describe the short-term (construction) impacts that will result from the construction activities described in this section.

Table 2.1-2 summarizes primary civil construction activities that will occur under the LPA. Construction activities are not limited to those identified in the table. The primary construction activities for this Project will be civil construction, OMF construction, systems build, and installation and integration and startup activities. In general, construction of the LPA will require a linear construction approach that will be sequenced into multiple segments. Each of the segments will have defined contractual durations and completion milestones that support the overall baseline project schedule. The segments may also include independent milestones related to specific activity completions requested by businesses and stakeholders. The civil construction will generally begin with the construction of the light rail tunnel in the Kenilworth Corridor, Kenilworth Channel bridges, and the TC&W freight rail modifications.

Detailed work-specific construction plans will be implemented to define the various segments, required contracts, schedules, and estimated cost. The generated information will be used to evaluate and manage the construction progress. It is anticipated that night work may be performed and in some cases 24-hour operations may be required to accommodate maintenance of traffic conditions or related stakeholder requirements. Construction through some of the intersections will require well thought out plans and may require night work to offset the demands of high traffic volumes. Periodic communication by means of the Council's outreach program will be important to keep the local public aware of progress and construction expectations.

TABLE 2.1-2

Southwest LRT LPA Civil Construction Activities

Construction Activity	Elements of Activity
General demolition/removals	<ul style="list-style-type: none"> • Demolition and/or removal of buildings/bridges/pavement
Clearing and grubbing (i.e., soil preparation, such as root removal)	<ul style="list-style-type: none"> • Removal of vegetation and waste from right of way
Grading and fill operations	<ul style="list-style-type: none"> • Earthwork • Excavation and embankment
Public utilities	<ul style="list-style-type: none"> • Relocation of existing public utilities • New installation public utilities • Encasing of utilities for protection • Abandoning existing public utilities
Private utilities	<ul style="list-style-type: none"> • Relocation of existing private utilities • New installation private utilities • Encasing of utilities for protection • Abandoning existing private utilities
Bridges	<ul style="list-style-type: none"> • Soil testing • Improve soil conditions as required • Construct operational and temporary infrastructure related to freight, light rail, roadway, and pedestrian bridges, including pier overhead structure placement • Address vibration considerations during construction, as appropriate • Address noise considerations • Air quality considerations, as appropriate
Parking structures	<ul style="list-style-type: none"> • Soil testing and excavation • Concrete foundation • Multistory concrete/steel frame • Multistory concrete/masonry construction • Restricted construction zone • Vibration and noise considerations during construction • Traffic maintenance
Cut-and-cover tunnels	<ul style="list-style-type: none"> • Sheet pile coffer dam construction • Vibration considerations during construction • Restricted construction zone • Support of excavation
Retaining walls	<ul style="list-style-type: none"> • Soil testing and excavation • Reinforcement • Drainage and runoff collection • Construction of concrete/masonry wall • Restricted construction zone
Pavement – bituminous and concrete	<ul style="list-style-type: none"> • Bituminous asphalt application by MnDOT specifications • Concrete mix by MnDOT specifications • Traffic maintenance requirement • Noise considerations during construction • Air quality considerations during construction
Maintenance of traffic	<ul style="list-style-type: none"> • Detours • Closures • Temporary roads • Temporary trails/sidewalks • Temporary parking • Intersection phasing
Temporary, partial, limited access	<ul style="list-style-type: none"> • Public access to construction sites limited • Limited or restricted access to sections of multimodal trails (with detours provided to maintain existing connections) • Effect but maintain access to businesses, residences, public roads, parks, waterways (with detours provided to maintain existing connections)

Construction Activity	Elements of Activity
Delivery of materials and equipment	<ul style="list-style-type: none"> • Staging area established for all sites • Increased congestion for intersections near construction • Address noise considerations during construction, as appropriate • Address air quality considerations during construction, as appropriate
Erosion control – National Pollutant Discharge Elimination System/Stormwater Pollution Prevention Plan compliance	<ul style="list-style-type: none"> • Application of best management practices • Stormwater control at construction sites • Permit required if discharge into waterbody • Minimization of clearing and grading • Limit soil exposure and stabilization of exposed soil • Cuts and slopes protected • Perimeter controls to filter sediments • Waste control to prevent trash and washout in runoff
Water evacuation of sealed tunnel cells, stormwater retention ponds, and groundwater	<ul style="list-style-type: none"> • Waterproofing of tunnels during excavation • Tunnel cells sealed to prevent runoff and erosion • Creation of retention pond according to NPDES
Drying of the stockpiled tunnel saturated material	<ul style="list-style-type: none"> • Tunnel soil and material stockpiled and dried • Reuse of material
Stations	<ul style="list-style-type: none"> • Rail, pedestrian and vehicle access • Soil testing and excavation/fill • Concrete foundation • Construction of steel/concrete frame • Construction of at-grade steel/concrete structure • Address noise considerations, as appropriate • Address air quality considerations, as appropriate
Pile driving at stations, bridges, selected tracks, and retaining wall locations	<ul style="list-style-type: none"> • Installation of foundational piles through pile driving • Address noise impacts in immediate area, as appropriate • Address vibration concerns during construction, as appropriate • Potential effect on structures in immediate vicinity • Preconstruction survey and vibration monitoring
Vertical circulation	<ul style="list-style-type: none"> • Construction of accessibility to stations • Addition of ramps, stairs, elevators
Track	<ul style="list-style-type: none"> • Direct fixation • Ballasted track • Embedded track • Temporary shoofly construction
Overhead contact system/substations/systems	<ul style="list-style-type: none"> • Construction of railway electrification system • Contact wire supported by messenger or catenary wire • Wires set in tension • Wires strung between support structures • Public access limited

Source: *Southwest LRT East Construction Impacts Summary* (Council 2015v) and *Southwest LRT West Construction Impacts Summary* (Council 2014c)

MnDOT = Minnesota Department of Transportation

Staging will be further evaluated and updated as the construction process and phasing is better defined during Engineering. Areas where construction staging could occur within property under control of the Council, as well as other publicly owned properties, will be analyzed during advanced Engineering to accommodate additional potential staging areas. Staging areas will be required to store materials, equipment, and to provide laydown area during construction. The following factors have and will be considered for the identification and design of staging areas:

- Security of the staging area
- Ease of material and equipment delivery/storage
- Dual-use staging areas
- Opportunity for contractor labor parking

- Proper drainage
- Availability of power source
- Determination of several areas that will allow for rail welding operations and storage
- Limited impacts to existing trees/vegetation, residents, roads, and businesses

2.1.1.3 Freight Rail Modifications

With the LPA, freight rail service will continue to operate in its existing location in the Bass Lake Spur and Kenilworth Corridor with the following general areas of freight rail modifications in St. Louis Park and Minneapolis (see Exhibit 2.1-5). Chapter 4.4 includes additional information regarding freight rail facilities and operations.

Bass Lake Spur

Beginning east of Excelsior Boulevard and extending to east of Beltline Boulevard, the existing freight rail tracks (i.e., the Bass Lake Spur, owned by CP) will be shifted north approximately 45 feet, allowing the light rail alignment to be located south of the freight rail tracks thereby providing better station connections to local activity centers.⁴ At the crossing of Highway 100, the freight bridge will be relocated from the southern portion of the corridor to the north of the planned LRT bridge to match with the overall freight rail shift.

To facilitate the shift of the existing freight rail tracks, the Council intends to purchase all of the 6.8-mile Bass Lake Spur from CP Railway. Approximately 3.8 miles of the existing track in the Bass Lake Spur is needed to accomplish the shift. Completion of an administrative process with the Surface Transportation Board (STB) would be required to accomplish this purchase. Completion of the STB process and purchase would not constitute an abandonment action with the STB. Instead, the process would consist of three filings with STB as summarized in Table 2.1-3.

TABLE 2.1-3

Summary of STB Filings Required for Council's Purchase of Bass Lake Spur from Canadian Pacific Railway

STB Filing ^a	Party	Anticipated Timeframe: Filing	Anticipated Timeframe: STB Action
Notice of Exemption ^b (49 CFR §1150.31)	Council & CP Railway	At least 30 days prior to execution of Purchase Agreement for BLS	Effective 30 days after filing; dismissed when Motion to Dismiss is granted (49 CFR §1150.32(b))
Motion to Dismiss ^b	Council	Concurrent with Notice of Exemption	Decision issued 30-60 days after filing
Notice of Exemption (49 CFR §1150.31)	Twin Cities & Western	Concurrent with Council/CP Railway's Notice of Exemption	Effective 30 days after filing (49 CFR §1150.32(b))

^a Applies to CP-owned Bass Lake Spur, the HCRRA owned Kenilworth Corridor will have separate STB filings. Removal of siding track in the Bass Lake Spur will not require an STB filing.

^b Filed as a "State of Maine" transaction to purchase physical assets, but not acquire common carrier service (See State of Maine, Department of Transportation - Acquisition and Operation Exemption - Maine Central R.Co., 8 ICC 2d 835 (1991))

⁴ The existing freight rail tracks are on existing right-of-way owned by CP. In general, the tracks will be relocated approximately 45 feet north onto right-of-way currently owned by Hennepin County Regional Railroad Authority (HCRRA). The existing siding track in the Bass Lake Spur will also be removed. The proposed light rail alignment will be on what is now the CP-owned right-of-way. To accommodate these proposed improvements, Council intends to purchase the CP-owned right-of-way for use by the Project and agreements would be developed for continuing operations for freight rail and light rail. The nature of the agreements has not been determined.

To accomplish this purchase, two agreements will be executed:⁵

- **Easement.** An easement retained by CP will provide for Twin Cities & Western (TC&W) to provide common carrier service on the segment of track to be acquired by the Council. This easement would take effect after publication of this Final EIS and Record of Decision and upon closing of the following purchase agreement.
- **Purchase Agreement.** A purchase agreement between the Council and CP Railways will provide for the transfer of ownership of the physical assets of Bass Lake Spur from CP Railways to the Council. This purchase agreement will be executed after STB approval of the Motion to Dismiss described in Table 2.1-3.

Skunk Hollow Wye

A portion of the northern leg of the existing Skunk Hollow switching wye between the Bass Lake Spur and Oxford Street will be removed and replaced with the new Southerly Connector between the Bass Lake Spur and the Minneapolis, Northfield, & Southern Railway (MN&S) Spur (which is owned by CP) that will cross over the proposed light rail alignment on a structure (see Exhibit 2.1-5). This freight rail modification will allow freight trains traveling on the Bass Lake Spur tracks to continue to access the MN&S Spur tracks.⁶

Kenilworth Corridor

Appendix E illustrates the following adjustments that will be made to the existing freight rail alignment, which is generally within the Kenilworth Corridor:

- There will be relatively minor adjustments to and reconstruction of the freight tracks between Beltline Boulevard and Cedar Lake Parkway
- The existing freight tracks will be moved up to approximately 40 feet north between Cedar Lake Parkway and the Burnham Road overpass
- There will be no adjustments or reconstruction of the existing freight alignment between the Burnham Road overpass and Cedar Lake Junction
- Installation of freight rail guardrail from north of West Lake Station to Cedar Lake Parkway
- Installation of freight guardrail from north of the Kenilworth Channel crossing to Burnham Road
- Installation of freight guardrail from West 21st Street to 1,000 feet north of West 21st Street

2.1.1.4 Transit Operations

The LPA will include a number of changes to existing transit operations in the corridor, including the operations of the new light rail extension and changes to the operations of the existing and planned bus systems of Metro Transit and SouthWest Transit. Note that the transit operations described in this section are those that are anticipated at this time. The actual service plans will be revised prior to opening in 2020, and will be a result of a service planning process that complies with the Council's and SouthWest Transit's service planning policies, with federal requirements (e.g., Title VI), and a variety of external factors (e.g., transit demand, funding availability, public and agency comment). See the *Draft Travel Demand Methodology*

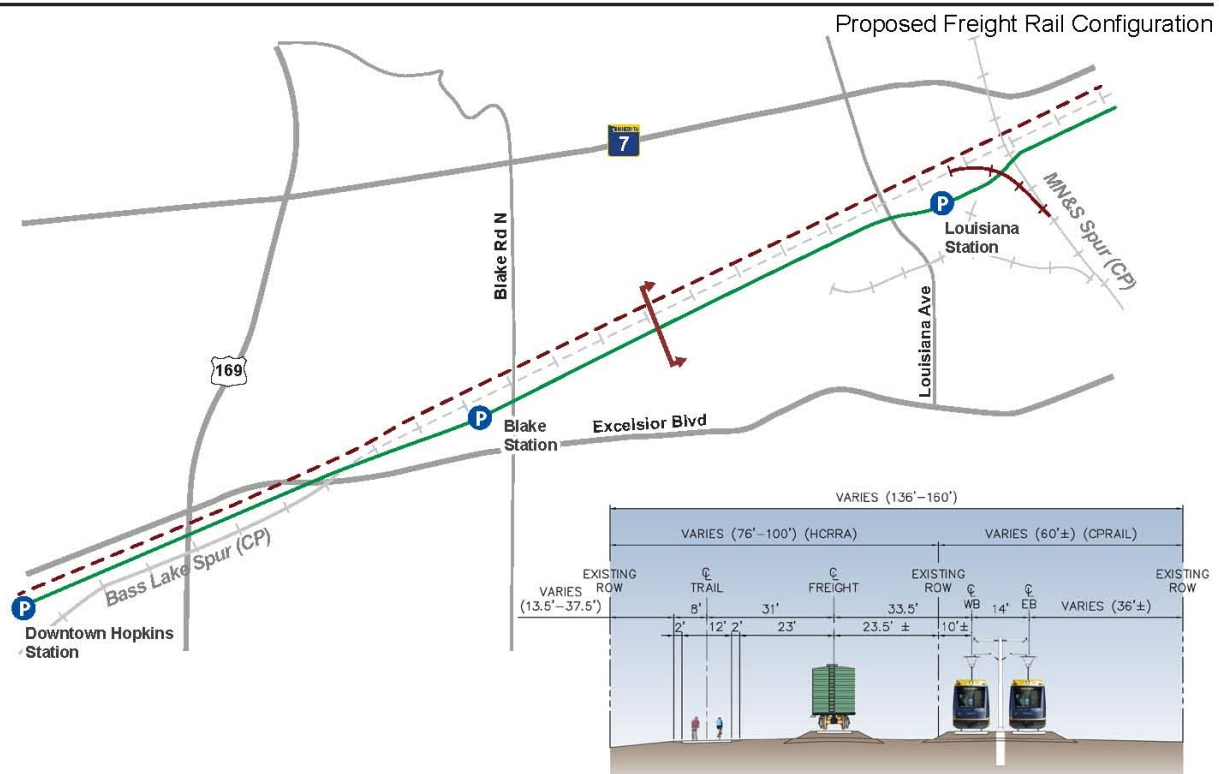
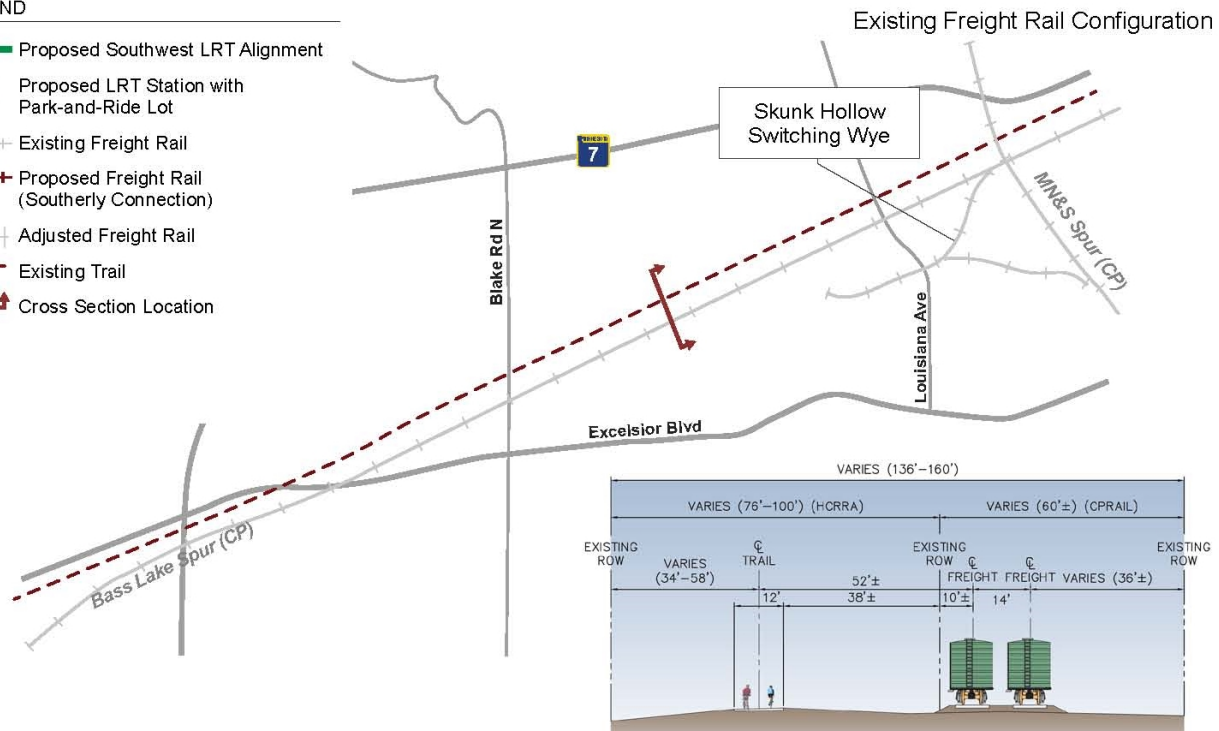
⁵ Based on this approach, no additional federal environmental assessment is needed for these actions to be implemented, because there would be no new railroad created as a result of the action; there would be no expansion of freight rail service into new geographical areas; and there would be no alteration to the existing freight rail operations (i.e., no increase in the number of freight rail trains) (49 CFR 1105.6(b)). Further, these actions are categorically excluded from completion of the federal NEPA process because there would be no resulting freight rail operations changes that would require additional analysis (i.e., there would be no adverse effects on energy usage or air quality, diversion of rail traffic to trucks, or an increase in rail activity) (49 CFR §1105.6(b)(4)).

⁶ Removal of a portion of the northern leg of the Skunk Hollow switching wye will be required to accommodate the placement of the light rail alignment south of the freight rail alignment on the existing northern switching wye alignment (see Exhibit 2.1-5). The southern leg of the Skunk Hollow switching wye will remain in place, providing the continuation of freight rail service to the Robert B. Hill Company salt facility at the west end of the switching wye.

EXHIBIT 2.1-5 Freight Rail Modifications

LEGEND

- Proposed Southwest LRT Alignment
- P Proposed LRT Station with Park-and-Ride Lot
- Existing Freight Rail
- Proposed Freight Rail (Southerly Connection)
- - - Adjusted Freight Rail
- - - Existing Trail
- ↔ Cross Section Location



	Southwest LRT FINAL EIS Proposed Freight Rail Modifications Southwest LRT Project		
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& *Forecast, Revision 3, Southwest LRT Technical Report* (Council, 2015) for additional information on transit operations under the LPA.

A. Light Rail Operations

The light rail operating hours and headways⁷ of the METRO Green Line Extension are planned to be as follows under the LPA (the LPA will not result in changes to the operations of the other light rail lines in the METRO system):

- Early morning hours (12:15 a.m. to 2:00 a.m.): 60-minute headways
- Morning hours (4:00 a.m. to 5:30 a.m.): 30-minute headways
- Prepeak morning operating hours (5:30 a.m. to 6:30 a.m.) 15-minute headways
- AM peak hours (6:30 a.m. to 8:30 a.m.): 10-minute headways
- Mid-day operating hours (8:30 a.m. to 3:30 p.m.) 10-minute headways
- PM peak operating hours (3:30 p.m. to 6:00 p.m.): 10-minute headways
- Post PM peak operating hours (6:00 p.m. to 9:00 p.m.): 10-minute headways
- Evening hours (9:00 p.m. to 10:15 p.m.): 20-minute headways
- Late evening hours (10:15 p.m. to 12:15 a.m.): 30-minute headways

Section 4.1.3 describes the operating characteristics of the light rail system under the LPA (e.g., vehicle miles traveled, revenue hours).

B. Bus Operations

The Council, Metro Transit, and SouthWest Transit collaborated to develop the 2040 bus operations plan associated with the LPA. Bus routing in the corridor under the LPA are illustrated in Exhibit 4.1-5. The plan will increase levels of bus service in the corridor, resulting in additional bus vehicle miles traveled and revenue hours. Section 4.1.3 describes the operating characteristics of the bus system under the LPA (e.g., vehicle miles traveled, revenue hours).

2.1.2 Locally Requested Capital Investments

LRCIs are improvements proposed by Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Hennepin County to be undertaken separate from, but contingent upon, implementation of the LPA. These proposed improvements are not needed to support the base function of the LPA, nor do they represent mitigation for any impact of the LPA. These proposed activities may be implemented independently by the stakeholder cities at a future date, and are not conditions of the Project, however in some cases implementing a LRCI separately would not be as efficient as constructing the LRCI with construction of the Project.

The Final EIS includes LRCIs to show the full range of Project components and impacts and mitigation measures are provided for adverse impacts from LRCIs, where applicable.

The stakeholders identified LRCIs through jurisdiction-specific local planning and decision-making processes. The preliminary LRCI list was presented to the Corridor Management Committee (CMC) in October 2014 and an updated preliminary list was presented to the Executive Change Control Board in December 2014. The list of LRCIs was updated throughout 2015. There are 19 proposed LRCIs.

If constructed by the Council's contractor(s), the LRCIs will be included as part of the Southwest LRT Project construction bid packages and activities; the construction documents will clearly separate out the LRCI activities and costs from the LPA that is proposed to be funded through Federal Transit Administration's (FTA's) Capital Investment Grant Program.

The proposed LRCI actions may be within, adjacent to, or outside the LPA construction boundaries. The types of LRCI actions are defined in the following subsections. Table 2.1-4 includes a summary of the proposed LRCIs by category, and Exhibit 2.1-6 provides an illustration of the location of the proposed LRCIs (Appendix E also provides a more detailed description of each LRCI).

⁷ Headways are the average time between transit vehicles operating in the same direction by a common point over a given period of time (e.g., four inbound light rail trains passing by a station within one hour would result in a 15-minute headway).

TABLE 2.1-4

General Locally Requested Capital Investment Activities by Requestor and Identification Number

LRCI Category	LRCI Requestor and Identification Number ^a				
	Eden Prairie (LRCI ID #)	Minnetonka (LRCI ID #)	Hopkins (LRCI ID #)	St. Louis Park (LRCI ID #)	Hennepin County (LRCI ID #)
Local Roadway Improvements	X (1, 11)	X (12)		X (17, 32)	
Streetscape/Landscape/ Aesthetic Improvements	X (4, 5, 6, 7, 8, 9, 10)				
Local Pedestrian/Bicycle Improvements	X (2, 3)			X (33)	X (26)
Utility Activities			X (14)		X (27)
Guideway Profile Adjustment		X (13)			

^a See Exhibit 2.1-6 for an illustration of the location of the LRCIs by identification number.

2.1.2.1 Local Roadway Improvements

The Cities of Eden Prairie, Minnetonka, and St. Louis Park have identified local roadway improvements to enhance connectivity to the proposed Southwest LRT stations. While the LPA includes required improvements to access stations, the LRCI activities under this category go beyond the requirements of the LPA. Improvements under this category include new local roadway underpasses that will extend under the light rail line, roadway reconstruction, and new roadway extensions from station areas to the existing roadway network that will provide additional connections beyond the requirements for the Southwest LRT LPA. These improvements are not required for implementation of the LPA; however, if funded by the requesting city, they will be included as part of the construction of the Project.

2.1.2.2 Streetscape/Landscape/Aesthetic Improvements

In addition to the streetscaping, landscaping, and aesthetic treatments included as part of the proposed Southwest LRT LPA, the City of Eden Prairie requested additional improvements in conjunction with LPA construction. Improvements under this category include treatments such as decorative lighting along roadways, additional pedestrian lighting beyond requirements of the LPA, decorative catenary poles, decorative fencing and bridge railings, aesthetic treatments to bridge structures, planter boxes along roadways, and embedded track alongside a roadway. These improvements are not required for LPA implementation, however if funded by the requesting city, will be included as part of the construction of the Project.

2.1.2.3 Local Pedestrian/Bicycle Improvements

In addition to the pedestrian and bicycle connections proposed as part of the LPA, the Cities of Eden Prairie and St. Louis Park and Hennepin County identified additional pedestrian/bicycle trail projects. Improvements under this category include construction of new trail sections to improve connections to existing facilities beyond the requirements of the LPA. These improvements are not required for the Southwest LRT LPA, however if funded by the requesting city and/or county, will be included as part of the construction of the Project.

2.1.2.4 Utility Activities

Utility relocations and/or replacements are expected when existing utility facilities are in conflict with LRT improvements. These types of improvements will be part of the LPA. However, when improvements extend beyond the limits of the transitway and stations or include upgrading the size and/or capacity of utilities,

associated costs will be funded locally. The City of Hopkins and Hennepin County identified improvements within this category, including burying power lines along an existing trail, new water and sanitary sewer to serve future development, and providing fiber optic conduit along the length of the corridor. These improvements are not required for LPA implementation; however, if funded by the requesting city and/or county, the improvements will be included as part of the construction of the Project.

2.1.2.5 Guideway Profile Adjustment

The City of Minnetonka identified an adjustment to the guideway profile to not preclude a future potential infill station at Smetana Road. This includes additional excavation and retaining structures beyond that required for the LPA to accommodate a level area for a potential future station. This potential future infill station is not part of LPA implementation; however, if funded by the requesting city, the additional excavation and retaining structures to allow for a future infill station would be included as part of the construction of Project.

2.1.3 Project

The Project, as evaluated in this Final EIS, includes both the LPA and the LRCIs described in Sections 2.1.1 and 2.1.2, respectively. The capital components of the LPA and LRCIs are listed and illustrated in Appendix E.

In addition to the Project, there is a potential joint development project at the proposed Beltline Station. The Beltline Joint Development Project is evaluated separately from the Project because implementation of the potential joint development project will not be determined until after publication of this Final EIS. Chapter 10 includes the evaluation of the Beltline Station Joint Development Project.

2.1.4 No Build Alternative

The development and analysis of a no build or no action alternative is required under NEPA and MEPA. The No Build Alternative represents both a possible outcome of this Final EIS process, as well as a reference point to gauge the benefits, costs, and impacts of the Project. The No Build Alternative represents the existing transportation system with the planned transportation improvements included in the Current Revenue Scenarios (i.e., financially constrained) of the 2040 TPP (adopted January 2015), except for the Southwest Light Rail Project (LRT) Locally Preferred Alternative (LPA). The No Build Alternative will provide additional express and local bus service on existing facilities, including operation of bus shoulder lanes on the regional network.

2.1.4.1 Capital Improvements

The No Build Alternative is comprised of the following capital improvements: light rail, bus, roadway, and freight. The capital improvements are part of the fiscally constrained and federally approved 2040 TPP project list.

A. Light Rail Improvements

The light rail network and facilities (minus the Project) in the 2040 TPP are incorporated into the No Build Alternative. The No Build Alternative assumes the future transit service network will resemble the route structure and facilities of the existing system. Light rail improvements under the No Build Alternative include facilities for which funding has been committed. They include expanded existing facilities or interim improvements to future transitways that are incremental and identified on an as-needed basis. The TPP also includes an extension of the Blue Line (including 11 new light rail stations) from Minneapolis to Brooklyn Park, programmed for 2015-2024.

B. Bus Improvements

The bus network and facilities in the 2040 TPP are incorporated into the No Build Alternative. The No Build Alternative assumes the future bus service network will closely resemble the route structure and facilities of the existing local system, as well as plans for improvements and expansions to bus rapid transit lines.

These include:

- **METRO Gold Line.** 12-mile dedicated bus rapid transit line with plans to include 11 new stations from Saint Paul to Woodbury
- **METRO Red Line Extension.** Three-mile extension of the Red Line with plans to include three new stations from Apple Valley to Lakeville
- **A-Line, Snelling Avenue Arterial Bus Rapid Transit.** Bus rapid transit improvements in an arterial bus corridor running primarily along Snelling Avenue in Saint Paul from 46th Street Station on METRO Blue Line to Roseville
- **C-Line, Penn Avenue Arterial Bus Rapid Transit.** Bus rapid transit improvements in an arterial bus corridor running primarily along Penn Avenue and Highway 55 in Minneapolis from downtown Minneapolis to Brooklyn Center Transit Center
- **Chicago Emerson-Fremont Arterial Bus Rapid Transit.** Bus rapid transit improvements in an arterial bus corridor running primarily along Chicago/Portland Avenues, American Boulevard and Emerson and Fremont Avenues from Mall of America Transit Station in Bloomington to Brooklyn Center Transit Center

Noting that transit passenger facilities “provide convenient and attractive service,” the 2040 TPP identifies several existing transit facilities for expansion and proposes the construction of new facilities. Expansion of Bus Rapid Transit include facilities such as park-and-rides, transit centers, bus shoulders, and exclusive bus access ramps to major arterial roadways and highways. Improved passenger amenities are also mechanisms that help to attract future riders. These can include sheltered bus stops, heated waiting areas, ADA-accessible bus stops, technology improvements, and wayfinding systems.

C. Roadway Improvements

The 2040 TPP provides a comprehensive inventory of the transportation infrastructure and needs for the seven-county Twin Cities metropolitan region. The regional highway and roadway system is composed of interstate and federal highways, state and county highways, price-managed lanes, arterial roadways, and has programmed improvements intended to expand the capacity of the regional highway and roadway systems. The TPP includes capital projects for Highway MnPASS, Strategic Capacity Enhancements, Regional Highway Access, and Transitways only. These projects include:

- **I-35W Southbound from I-94 to 46th Street.** Adding High Occupancy Toll/transit priority lane and Lake Street Interchange with Bus Rapid Transit Station.
- **Highway 100 from 36th Street to Cedar Lake Road.** Replace the Tier 1 bridges and ancillary improvements.
- **I-494 Capacity Enhancements.** In addition to pavement, bridge, and roadside infrastructure investments, construct one general purpose lane in each direction between Trunk Highway 55 and I-94/694, and operational improvements in other locations between I-394 and I-94/694.
- **Reconstruction of the I-494/Highway 169 Interchange**

D. Freight Rail

Freight rail in 2040 is expected to be similar to existing facilities, noting that the owners of those facilities will change their facilities and/or operations as they deem appropriate. The 2040 TPP notes that “Many freight-related improvements will be the responsibility of private entities that own and operate the transportation modes and freight terminal facilities. Freight railroads are privately owned so each rail company makes its own plans for future infrastructure investments.”

The Minneapolis/St. Paul metropolitan area is a focal point of the freight railroad system in the North Central region of the United States. Four of North America’s Class I railroads, (1) BNSF Railway, (2) Union Pacific Railroad, (3) CP Railway and (4) Canadian National, provide service to the Twin Cities. TC&W and Progressive Rail also operate in the metropolitan area. The Minnesota Commercial Railroad facilitates

interchange among these carriers. Minnesota Commercial Railroad, based in St. Paul, is classified as a switching and terminal railroad.

There are currently four active freight rail lines within the corridor: the CP-owned Bass Lake Spur; the CP-owned MN&S Spur; the HCRRA-owned Kenilworth Corridor; and the BNSF-owned Wayzata Subdivision.

According to data obtained from Federal Railroad Administration (FRA) and from freight rail operators in 2014, the following number of trains currently operate in the study area:

- **MN&S Spur.** CP Railway currently operates 10 weekly trains with 10 to 25 cars per train, using one or two locomotives.
- **BNSF Wayzata Subdivision.** BNSF and TC&W currently operate eight to 20 trains per day, using one or two locomotives.
- **CP Railway Bass Lake Spur and HCRRA Kenilworth Corridor.** TC&W current operations include:
 - 14 weekly trains with two or more locomotives and 65 to 75 cars per train. These trains primarily deliver agricultural goods.
 - Five to six weekly trains with two to four locomotives and 80 to 125 cars per train. These trains primarily deliver ethanol, grain, and coal.

2.1.4.2 Transit Operations

The No Build Alternative reflects a “likely growth” scenario for Metro Transit and SouthWest Transit bus service that is based on near-term and long-range service plans. See the *Draft Travel Demand Methodology & Forecast, Revision 3, Southwest LRT Technical Report* (Council, 2015) for additional information on transit operations under the No Build Alternative. Exhibit 2.1-7 shows the major transit projects included in the 2040 No-Build Alternative. In particular, the 2040 service plan for the No Build Alternative includes the following features:⁸

- **Existing Transitways.** METRO Blue (Hiawatha LRT), METRO Green (Central Corridor LRT), METRO Red (Cedar BRT) Lines; and North Star Commuter Rail
- **Future Major Transit Projects.** METRO Blue Line Extension (Bottineau LRT), Orange (I-35W BRT), Gold (Gateway BRT), and Red (extension to 181st Street) Lines
- **Arterial BRT Lines.** A (Snelling Avenue), C (Penn Avenue), and Chicago-Emerson/Fremont

A. Light Rail Operations

Under the No Build Alternative, the light rail system will experience an incremental growth in vehicle miles traveled and revenue hours that will respond to anticipated growth in demand, as well as implementation of the METRO Blue Line Extension. Section 4.1.3 describes the operating characteristics of the light rail system under the No Build Alternative (e.g., vehicle miles traveled, revenue hours). Section 4.1.3 describes the operating characteristics of the light rail system under the LPA (e.g., vehicle miles traveled, revenue hours).

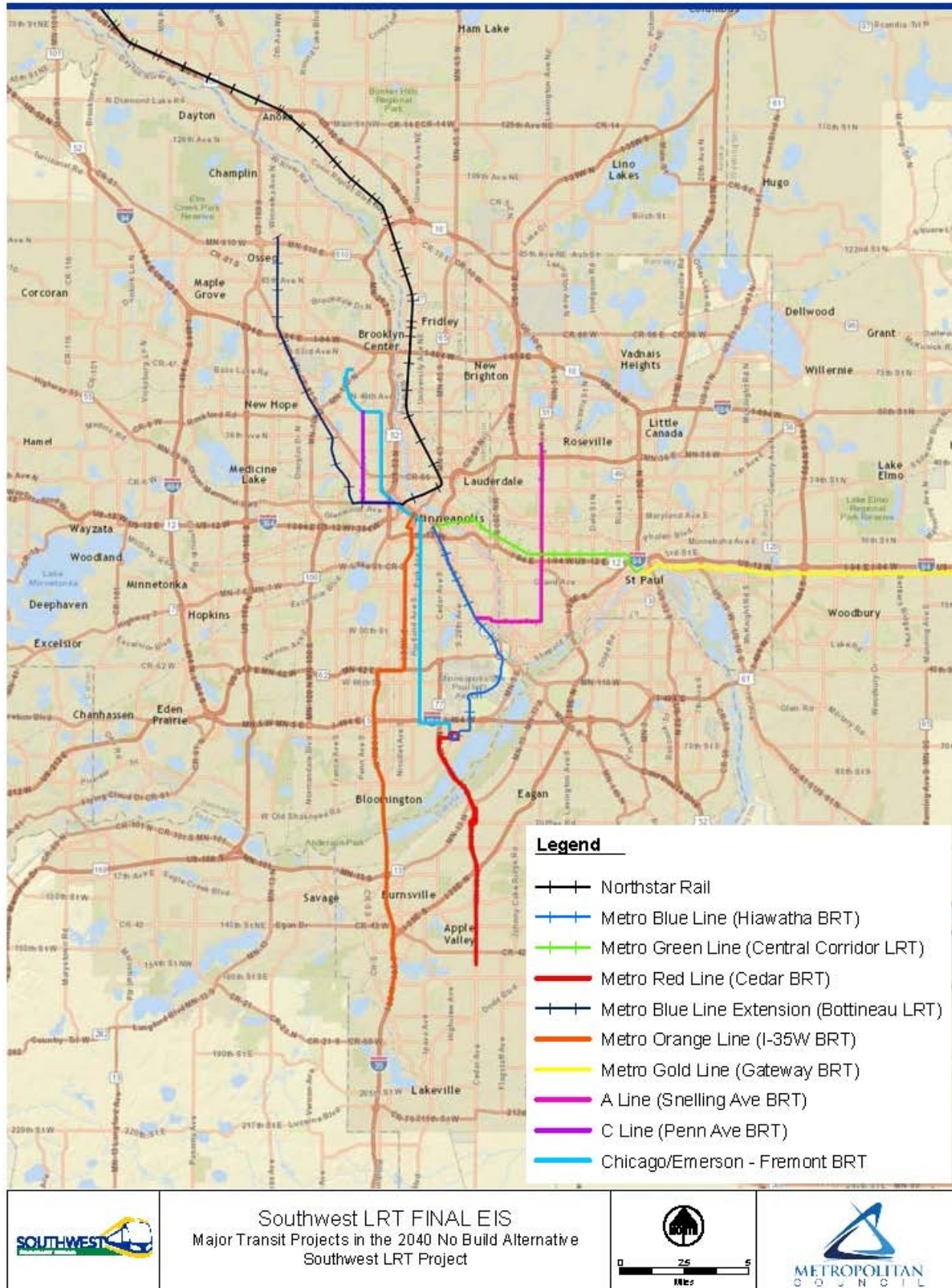
B. Bus Operations

Under the No Build Alternative, the bus network will experience a relatively minor change in miles traveled and revenue hours. While many routes in the corridor will see no change, Routes 12, 17 and 604 will see substantial changes to increase frequency or extend service span in response to anticipated increased demand. Additionally, a new crosstown Route 620 will be added to connect Hopkins and Eden Prairie. Some existing routes will be altered to account for the addition of three new bus rapid transit routes. Exhibit 4.1-4 illustrates the bus network under the No Build Alternative in 2040. Section 4.1.3 describes the operating characteristics of the bus system under the LPA (e.g., vehicle miles traveled, revenue hours).

⁸ Source: 2040 Transportation Policy Plan, Metropolitan Council, January 2015.

EXHIBIT 2.1-7

Major Transit Projects in the 2040 No Build Alternative

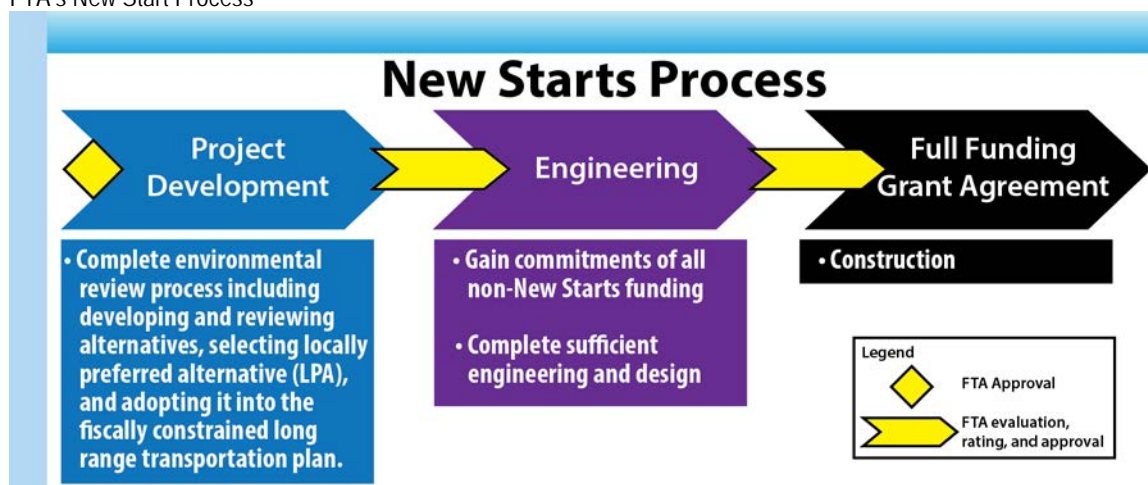


2.2 Alternatives Previously Considered

This section describes the decision-making process leading to the Final EIS. The LPA and the Project are a product of the following key environmental and planning efforts for high-capacity transit in the Southwest LRT Corridor. Following an overview of the Project's participating agencies, this section addresses the following alternative development, evaluation, and screening process: Southwest Transitway Alternatives Analysis; Draft EIS; Supplemental Draft EIS; and Engineering adjustments since publication of the Supplemental Draft EIS.

The Southwest LRT Project has been and will continue to be developed and constructed as part of the FTA's New Starts process, which is required for the Council to receive a federal Capital Investment Grant to help fund a portion of the Project's capital costs (see Chapter 7 for additional information on the Council's finance plan). Since the Project's inception, FTA's New Starts process has been modified to help streamline the process. The current New Starts process is illustrated in Exhibit 2.2-1. As illustrated in the exhibit, there are three overall steps within the current New Starts process: (1) Project Development; (2) Engineering; and (3) the Full Funding Grant Agreement. Each step in the process is initiated with an FTA approval and the final two steps require FTA's evaluation and rating of the proposed Project. The Southwest LRT Project is currently within the Project Development step. Following publication of this Final EIS and Record of Decision, the Project will seek approval from FTA to advance into the Engineering step and then it will seek the execution of a Full Funding Grant Agreement.

EXHIBIT 2.2-1
FTA's New Start Process



2.2.1 Overview and Project Participating Agencies

The following subsections provide a high-level overview of the environmental analysis and documentation process, as well as a description of the agency coordination for the Project.

2.2.1.1 Overview

Mobility issues and high-capacity transit improvements in the corridor extending southwest from downtown Minneapolis have been evaluated by the Council and HCRRA since the mid-1980s. In 2005, building on prior planning efforts (see Section 2.1.1 of the Draft EIS), HCRRA initiated the Southwest Transitway Alternatives Analysis (AA) process, which compared the benefits, costs, and impacts of a range of transit alternatives (modes and routes) to identify which alternative(s) would best meet the needs of the communities as expressed in the AA's Purpose and Need Statement. Section 2.1.1 of the Draft EIS provides a description of the alternatives that were developed, the results of the analysis, and the alternatives that were dismissed and carried forward for further study. The range of alternatives considered included enhanced bus, bus rapid transit, and light rail, including a range of potential alignments for bus rapid transit and light rail.

The results of the AA laid the foundation for the Project's development and evaluation of alternatives under NEPA, which was initiated in September 2008 when FTA and HCRRA issued their notice of intent to publish an EIS for the Southwest Transitway Project. The Project's scoping process began with FTA and HCRRA's proposal to study the alternatives resulting from the AA within a federal and state EIS. During the scoping process, HCRRA solicited public and agency comments on the range of alternatives to be studied in the EIS. As a result of comments received and additional design development and analysis, HCRRA and FTA modified the range of alternatives to be studied further in the Project's Draft EIS. A description of the Project's scoping process and results is provided in Section 2.1.2 of the Draft EIS.

In May 2010, the Project's AA process was completed with the identification of the LPA and incorporation of the LPA into the 2030 Transportation Policy Plan by the Council. Section 2.1.3 of the Draft EIS provides an overview of the alternatives that were considered within the LPA selection process, how they were evaluated, and the rationale for the identification of the LPA. LRT 3A was identified as the LPA based on the AA's assessment of four evaluation categories: planning compatibility; performance; implementation factors; and critical environmental resources. In summary, HCRRA and the Council found that LRT 3A would best meet the AA's Purpose and Need Statement, as expressed by the goals of improving mobility, providing a cost-effective and efficient travel option, preserving the environment, protecting quality of life and supporting economic development.

The LPA was incorporated within two of the seven alternatives evaluated in the Draft EIS. After publication of the Draft EIS, the Council undertook a process to develop and evaluate potential adjustments to LRT 3A and LRT 3A-1 based on comments received on the Draft EIS. The range of adjustments considered and the measures used by the Council to evaluate them were summarized in a Supplemental Draft EIS.

2.2.1.2 Agency Coordination

The Council is working closely with the following state and local agencies and jurisdictions as part of the development process for the Project: FTA, the Minnesota Department of Transportation (MnDOT); Minnesota State Historic Preservation Office; Hennepin County; HCRRA; Minneapolis Park and Recreation Board; and the cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, Edina, and Minneapolis. The Council has several advisory committees providing input from policymakers, government entities, community groups, businesses, and residents.

FTA, as the Project's lead federal agency, has ensured that the Project completes its federal environmental review process and documentation in compliance with NEPA and related laws. FTA invited the federal STB⁹ and the United States Army Corps of Engineers¹⁰ (USACE) to become Cooperating Agencies, in accordance with Title 40 of the Code of Federal Regulations (40 CFR 1508.5).

As documented in the Draft EIS, the STB agreed to become a Cooperating Agency in August 2012 because several alternatives under evaluation at the time would have required STB approval to be implemented. Subsequent to the publication of the Draft EIS, the freight rail modifications to be incorporated into the proposed action can be implemented without the need for NEPA review by STB.¹¹ As such, FTA and the STB agreed that STB would participate in the Project's NEPA process as a Participating Agency.

⁹ The STB is responsible for ensuring compliance with NEPA and related laws for cases affecting freight rail commerce filed with the agency as per Ex Parte No. 55 [Sub-No. 22 A], (*Implementation of Environmental Laws*, 7 I.C.C 2nd 807, effective September 29, 1991).

¹⁰ The USACE is responsible for implementing NEPA and related laws and Section 404 of the Clean Water Act (CWA).

¹¹ The Council proposes to purchase the Bass Lake Spur from CP Railway, which will require the completion of an administrative process with the STB. Completion of the STB process and subsequent purchase would not constitute an abandonment action with the STB. Instead, the administrative process with the STB would consist of three filings with STB as summarized in Section 2.1.1.1.H, and that process can be implemented without the need for NEPA review by STB.

The USACE agreed to become a Cooperating Agency in July 2013.¹² (See Appendix E, Agency Coordination Letters, of the Supplemental Draft EIS for documentation related to the two agencies' current status.) To streamline environmental permitting, FTA and USACE are implementing a merger process between the NEPA and Clean Water Act (CWA) Section 404 permitting processes (referred to as the "NEPA/404 merger process" or "merger process"). This merger process enables coordination between FTA and USACE during preparation of the EIS, which allows the USACE to satisfy the requirements of NEPA and the CWA concurrently. The NEPA/404 merger process is structured around four sequential concurrence points at key milestones during Project development: (1) Project Purpose and Need, (2) Array of Alternatives and Alternatives Carried Forward, (3) Identification of the Selected Alternative, and (4) Engineering Phase Impact Mitigation. FTA and USACE agreement at these milestones will facilitate the issuance of a CWA Section 404 permit. Within the third milestone of the merger process, the USACE identifies the Least Environmentally Damaging and Practicable Alternative (LEDPA) from among those that meet the USACE's overall project purpose to determine whether the preferred alternative is likely to be permissible under the CWA.

The USACE must determine whether the Southwest LRT Project complies with the Clean Water Act Section 404(b)(1) Guidelines (Guidelines) (40 CFR Part 320). The Guidelines specifically require that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR § 230.10(a)). Per the Guidelines, a practicable alternative is defined as available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall Project purpose.

On December 20, 2012, the USACE commented on the Project's Draft EIS (see Appendix L). Within those comments, the USACE noted the following: (1) a suggested overall Project purpose for the 404 permit process of "to provide high-capacity transit service in the Southwest Transitway study area," which is reflected in Chapter 1 of the Supplemental Draft EIS; (2) "the Corps concurs with the array of alternatives considered for this Project as well as the alternatives that were carried forward in the DEIS;" and (3) "as proposed [in the Draft EIS] the chosen LPA, alternative LRT 3A, would not qualify as the LEDPA..., which as proposed would be alternative LRT 3A-1 (co-location)." In response to the USACE's comment on the LEDPA, and in compliance with CWA requirements for the analysis of practicable alternatives that would avoid or minimize wetland impacts, the Council included both relocation and co-location designs as it developed and evaluated potential design adjustments for the LPA, utilizing the process described in Sections 2.3 and 2.4 of the Supplemental Draft EIS. The results of those design adjustments are documented in the NEPA/404 Merger Process – Southwest LRT Concurrence Points Package, which was submitted to the USACE by the Council on May 5, 2014 (Council, 2014). The Concurrence Points Package addressed Concurrence Points 1-3. The Concurrence Points Package notes the following: "The project scope as identified by the Council on April 9, 2014, which would retain existing freight rail service in the Kenilworth Corridor, is consistent with USACE's comment letter from December 20, 2012, stating that LRT 3A-1, which would also have retained existing freight rail service in the Kenilworth Corridor, meets the USACE project purpose and has the least amount of impact to aquatic resources ..." (page 5). LRT 3A-1 was advanced based on USACE's identification of LRT 3A-1 as the LEDPA. As previously noted, the USACE, based on its review of the May 2014 Concurrence Package, again made the preliminary determination that LRT 3A-1 remains the Project's LEDPA.

Concurrence Point 4 was submitted to the USACE on August 26, 2015. The fourth Concurrence Point milestone included a comprehensive description of the design minimization efforts for each aquatic resource

¹² The roles and responsibilities of cooperating and participating agencies are similar, but cooperating agencies have a higher degree of authority, responsibility, and involvement in the environmental review process. A distinguishing feature of a cooperating agency is that the CEQ regulations (40 CFR § 1506.3) permit a cooperating agency to "adopt without recirculation of the environmental impact statement of a lead agency when, after an independent review of the statement, the cooperating agency concludes that its comments and suggestions have been satisfied." This provision is particularly important to permitting agencies, such as the U.S. Army Corps of Engineers, who, as cooperating agencies, routinely adopt USDOT environmental documents.

located within the wetland study area. The USACE provided concurrence to the fourth and final milestone on October 14, 2015. Documentation of USACE concurrence with each milestone can be found in Appendix N.

Upon receiving concurrence to the fourth milestone, the Council submitted the Section 404 CWA permit application to the USACE on November 13, 2015. This application included the following items: (1) applicant and site location information; (2) a detailed summary of impacted aquatic resources; (3) supporting information for activities not requiring mitigation; (4) a detailed description of the Council's avoidance and minimization efforts; and (5) a summary of the replacement/compensatory mitigation that will be provided for this Project. The public notice period for this permit application is complete and the USACE is currently in the process of completing their review of the application. The Section 404 CWA permit will be issued prior to construction of the Project. Instructions on how to access this permit application can be found in Appendix D.

For the Project's Alternatives Analysis, scoping and Draft EIS, HCRRA served as the Project's local lead agency; upon the close of the Draft EIS comment period on December 31, 2012, the Council assumed responsibility from HCRRA as the local lead agency for continuation of the environmental process. At that time, the Project's name was changed from the Southwest Transitway Project to the Southwest Light Rail Transit (METRO Green Line Extension) Project (Southwest LRT). The Council also continued activities related to FTA's Project Development process (formerly referred to as Preliminary Engineering), including the development, evaluation, and identification of design adjustments to LRT 3A and LRT 3A-1 based on comments received on the Draft EIS. The Council was also responsible for expanding the level of engineering needed on the LPA to prepare the Final EIS and to complete the Project Development process.

The design adjustment process implemented since completion of the Draft EIS was supported by the Project's Technical Project Advisory Committee (TPAC), which is composed of staff from MnDOT, the Council's Metro Transit Operations Division and affected local jurisdictions. Elected officials of the corridor cities and Hennepin County, MnDOT, and the Council, and a representative from the Project's Community Advisory Committee (CAC) serve on the Project's CMC, which advises the Council on project-related issues.

The Project's ongoing engagement and communication with the affected public has been a fundamental element of planning for the Southwest LRT Project, including the design adjustment process implemented since completion of the Draft EIS public comment period. Community representatives serve on the Project's Business Advisory Committee (BAC) and CAC, which provide input and recommendations to the CMC, including design adjustments developed and evaluated since publication of the Draft EIS. Meetings with the public have been tailored to present information and solicit feedback on specific project issues. Chapter 9 provides additional detail on the Project's public involvement process and activities and it provides additional information on the makeup of the CAC and BAC.

On March 31, 2014, Council staff released a draft recommendation of the design adjustments to be incorporated into the proposed Project. Following receipt of public comment on those recommendations at its meeting on April 2, 2014, the CMC adopted a resolution recommending the design adjustments to be incorporated into the proposed Project's scope and budget. On April 9, 2014, the Council identified the adjustments to be incorporated into the proposed Project. The Council's action was based on its consideration of the technical analysis of the range of potential design adjustments to the proposed Project, as summarized in Section 2.3 of the Supplemental Draft EIS. The Council also considered comments received from the public, agencies, jurisdictions, and committees within the Project's public involvement and agency coordination activities since the close of the Draft EIS public comment period, as summarized in Chapter 4 of the Supplemental Draft EIS, including public testimony received at its meeting on April 9, 2014. On July 9, 2014, the CMC considered additional design adjustments within the City of Minneapolis that were proposed in a memorandum of understanding between the Council and the City of Minneapolis. The CMC endorsed the additional proposed design adjustments, which the Council subsequently approved on July 9, 2014 (Council and City, 2014b) (see Section 2.2.4 for additional detail).

On July 1, 2015 the CMC adopted a resolution recommending additional design modifications to the Council. On July 8, 2015 adopted additional design modifications that reduced project costs by approximately \$205 million (see Section 2.2.5 for additional detail).

The proposed action is included in the *2040 Transportation Policy Plan*, the region's long-range transportation plan; Hennepin County's *2030 Transportation System Plan*, which is part of the Hennepin County *2030 Comprehensive Plan*; and the comprehensive and transportation plans of the local municipalities in the project vicinity.

Additional detail on agency coordination for specific environmental categories is provided within Chapter 3 and Chapter 6, as applicable. Chapter 9 provides a detailed project-wide description of the Council's public involvement and agency coordination activities from the Project's scoping process through to publication of this Final EIS.

2.2.2 Alternatives Analysis

This section provides a brief summary of the Southwest LRT Project's Alternatives Analysis (AA) phase. Additional detail on the AA can be found in Section 2.1 of both the Draft EIS and the Supplemental Draft EIS. The Southwest Transitway Alternatives Analysis compared the benefits, costs, and impacts of a range of transit alternatives (different modes and routes) and resulted in the identification of the LPA (known at the time as Alternative 3A). The identified LPA was light rail constructed and operating on the Kenilworth-Opus-Golden Triangle alignment.

2.2.2.1 Alternatives Analysis Study and Report

HCRRRA initiated an AA of the Southwest Corridor in 2005 and completed the *Southwest Transitway Alternatives Analysis Report* in 2007. In that study, multiple transportation modes and alignments were evaluated against detailed performance criteria, including ridership, community impacts, environmental impacts, and cost. Table 2.2-1 lists the goals and evaluation measures used to screen alternatives during the AA. Appendix F of this Final EIS provides a copy of Chapter 7, Evaluation, of the AA report, which provides documentation of the detailed measures (including methodologies) used at that time to prepare summary findings for the performance of each alternative relative to each goal. For example, estimates of vehicle miles of travel, emissions, potentially affected natural environment, potentially affected residences, inventory of compact land use at stations for each alternative were prepared and the results were used to characterize the performance of the alternatives relative to the goal of preserving the quality of life. Some of the measures were quantitative, such as ridership estimates, and some were qualitative, such as consistency with regional growth plans. The AA report used the following summary categories for each goal: (1) strongly supports goal; (2) supports goal; and (3) does not support goal. Breakpoints or other methods used to reach those summary findings are also documented in Appendix F of this Final EIS.

Exhibit 2.2-2 presents summary findings from the AA for the build alternatives. Exhibits 2.2-3 to 2.2-5 illustrate the build alternatives evaluated in the AA. In summary, the Southwest Transitway AA included the evaluation of ten Build Alternatives and a conventional bus alternative referred to as the Enhanced Bus Alternative. The eight light rail transit (LRT) alternatives were labeled LRT 1A, 2A, 3A, 4A, 1C, 2C, 3C, and 4C. The bus rapid transit (BRT) alternatives were labeled BRT 1 and 2. The New Starts baseline alternative used for comparison with the Southwest LRT build alternative is a transportation system management (TSM) alternative. For New Starts comparison purposes, the TSM alternative was the Enhanced Bus option.¹³ The Enhanced Bus Alternative included two new limited-stop bus routes that would provide bi-directional service between Eden Prairie, Minnetonka, Hopkins, St. Louis Park and downtown Minneapolis. It also would include minor modifications to the existing express bus service, increased service frequencies, and restructured local bus service to provide better access along the limited-stop routes to key areas, including Golden Triangle and downtown Minneapolis.

¹³ Based on the Final Interim Policy Guidance: Federal Transit Administration Capital Investment Grant Program (FTA; August 2015), FTA's New Starts requirements no longer include the development and analysis of a baseline alternative. The baseline alternative has been replaced by FTA with the No Build Alternative for comparative purposes within the New Starts rating process. For additional information on the FTA New Starts program, see <http://www.fta.dot.gov/12304.html>.

TABLE 2.2-1
SOUTHWEST TRANSITWAY ALTERNATIVES ANALYSIS GOALS AND EVALUATION MEASURES

Goal	Evaluation Measure
Goal 1: Improve Mobility	<ul style="list-style-type: none"> • Project Ridership (2030) • New Transit Riders (2030) • Travel Time Savings (2030) • Transportation Capacity • Travel Time Competitiveness • System Integration • Transit Dependent Populations Served • Jobs and Population Served
Goal 2: Provide a Cost-Effective and Efficient Travel Option	<ul style="list-style-type: none"> • Capital Cost (2015) • Operating Cost (2015) • Preliminary Cost-Effectiveness Index • Peer City Comparisons • Potential Impact to Street Network
Goal 3: Protect the Environment	<ul style="list-style-type: none"> • Vehicle Miles of Travel • Emissions • Potentially Affected Natural Environment • Potentially Affected Residences • Inventory of Compact Land Use at Stations
Goal 4: Preserve the Quality of Life	<ul style="list-style-type: none"> • Anticipated Impact of Vehicle Technology on Property Values • Access to Community Amenities (libraries, parks, trails) • Access to Employment Opportunities for Low-income Households (2030) • Intermodal Connections • Integration and Documentation of Transit-oriented Development (TOD) Opportunities/Plans in Local Comprehensive Plans • Transit Ridership Forecast (2030) • Potential for Intensification of Land Use around Stations • Consistency with Regional Growth Plans • Impact of Park-and-Ride Lots on Existing and Planned Development at Stations • Access to and Accommodation of the Existing and Future Trail System
Goal 5: Support Economic Development	<ul style="list-style-type: none"> • TOD Potential at Station Locations • Jobs within 1/2-mile of Stations (2030) • Other Activity Generators (schools, medical facilities, entertainment venues, etc.) within 1/2-mile of Stations. • Consistency with Local Comprehensive Plan Goals Regarding Economic Development and Redevelopment at Stations, including Park-and-Ride Sites

Source: Southwest Transitway Alternatives Analysis Report; HCRRRA, 2007.

EXHIBIT 2.2-2

Evaluation Results of the Southwest Transitway Alternatives Analysis

Alternatives	Tier 1 Goals		Results	Tier 2 Goals			Recommendation
	Goal 1: Improve Mobility	Goal 2: Provide a Cost-Effective, Efficient Travel Option		Goal 3: Protect the Environment	Goal 4: Preserve and Protect the Quality of Life in the Study Area and Region	Goal 5: Support Economic Development	
Enhanced Bus (Baseline)	Carry forward as Baseline alternative (Required)			Carry forward as Baseline alternative (Required)			Carry forward as Baseline Alternative
BRT 1 - Eden Prairie to Minneapolis, HCRRA	●	●	Does not meet Tier 1 Goals: Do not carry forward				
BRT 2¹ - Eden Prairie to Minneapolis, Golden Triangle/Opus/TH 169/HCRRA	●	●	Does not meet Tier 1 Goals: Do not carry forward				
LRT 1A - Eden Prairie to Minneapolis, HCRRA/ Kenilworth/ Royalston	○	○	Meets Tier 1 Goals: Carry Forward to Tier 2	○	○	○	Carry forward for further analysis
LRT 2A¹ - Eden Prairie to Minneapolis, I-494/HCRRA /Kenilworth/Royalston	○	○	Meets Tier 1 Goals: Carry Forward to Tier 2	○	○	○	Other alternatives better meet Tier 2 Goals. Do not carry
LRT 3A¹ - Eden Prairie to Minneapolis, Golden Triangle/ Opus/ HCRRA/ Kenilworth/ Royalston	○	○	Meets Tier 1 Goals: Carry Forward to Tier 2	○	○	○	Carry forward for further analysis
LRT 4A - Hopkins to Minneapolis, HCRRA/ Kenilworth/ Royalston	●	○	Part of full alternative. Do not carry forward				
LRT 1C - Eden Prairie to Minneapolis, HCRRA/ Midtown/ Nicollet	○	●	Does not meet Tier 1 Goals: Do not carry forward				
LRT 2C - Eden Prairie to Minneapolis, I-494/ HCRRA/ Midtown/ Nicollet	○	●	Does not meet Tier 1 Goals: Do not carry forward				
LRT 3C - Eden Prairie to Minneapolis, Golden Triangle/ Opus/ HCRRA/ Midtown/ Nicollet	○	○	Meets Tier 1 Goals: Carry Forward to Tier 2	○	○	○	Carry forward for further analysis
LRT 4C¹ - Hopkins to Minneapolis, HCRRA/ Midtown/ Nicollet	●	●	Part of full alternative. Do not carry forward				
¹ Estimated not modeled							
Evaluation Breakpoints							
● Does not support goal			Supports goal on fewer than 4 of 6 measures	Supports goal on fewer than 7 of 10 measures	Supports goal on fewer than 3 of 4 measures		
○ Supports goal			Supports goal on 4 of 6 measures	Supports goal on 7 of 10 measures	Supports goal on 3 of 4 measures		
○ Strongly supports goal			Supports goal on all measures	Supports goal on all measures	Supports goal on all measures		
¹ Estimated not Modeled							

Source: Southwest Transitway Alternatives Analysis Final Report, 2007.

The AA evaluation used a two-step evaluation and screening process, using Goals 1 and 2 for the first step and Goals 3, 4, and 5 for the second step. The first step started with ten alternatives that were screened down to four and the second step went from four to three alternatives.

The Enhanced Bus Alternative was also identified during the AA, but it was not evaluated based on the goals because it would be carried forward into the Draft EIS process to serve as the federal New Starts baseline alternative, which was a federal requirement at the time. The two-step evaluation and screening process was based on the evaluation metrics previously described and documented in Appendix F of this Final EIS.

After evaluation and screening within that two-step process, three LRT alternatives, LRT 1A, LRT 3A, and LRT 3C, were recommended to be carried forward for consideration as the LPA. The LRT alternatives satisfied the goals and were deemed at that time to best fit the purpose and need of the Project. All three LRT alternatives would provide a dual LRT guideway with exclusive and semi-exclusive right-of-way (ROW). The LRT alternatives would primarily run at grade (ground level), with the exception of assumed grade separations with state trunk highways and interstate freeways and along LRT 3A and LRT 3C and a shallow cut-and-cover tunnel between the Midtown Corridor and Franklin Avenue in Minneapolis on the LRT 3C Alternative. The Southwest Transitway Project considered potential impacts to critical environmental resources prior to selecting the LPA. The intent of proceeding in that fashion was to ensure consideration of potential impacts to critical environmental resources and allow the public and resource agencies the opportunity to officially comment on the purpose and need for the Project and the proposed alternatives prior to selection of the LPA.

"A" Alternatives – 2005 Alternatives Analysis

EXHIBIT 2.2-4

"C" Alternatives – 2005 Alternatives Analysis

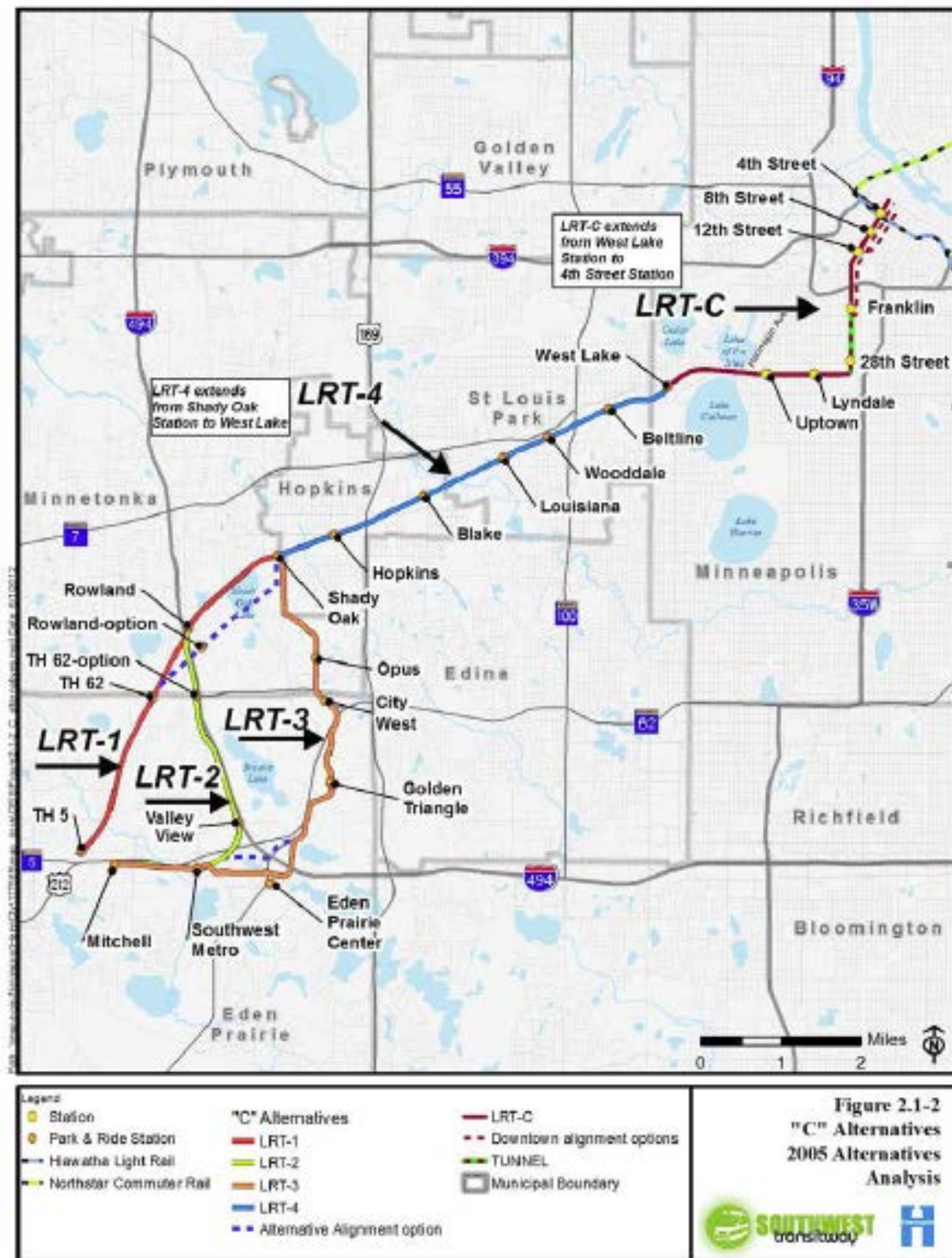
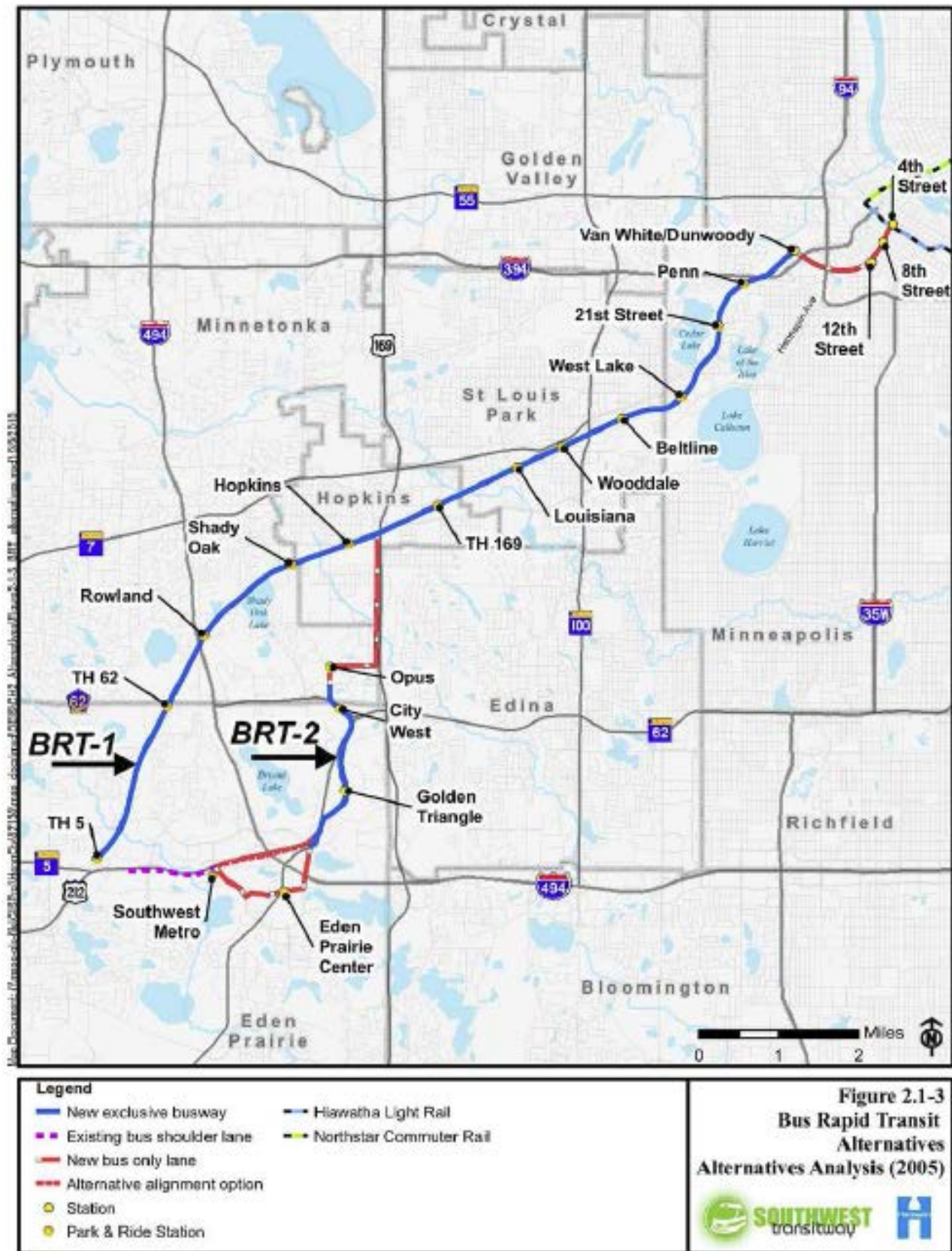


EXHIBIT 2.2-5

Bus Rapid Transit Alternatives – 2005 Alternatives Analysis



2.2.2.2 Notice of Intent to Publish an Environmental Impact Statement

After completion of the AA process and before identification of the LPA, the Project proceeded under HCRRA in September 2008 with publication of the federal Notice of Intent to Prepare an EIS (FTA, 2008b) and the state Notice of EIS Preparation (Minnesota Environmental Quality Board, 2008). HCRRA began development of NEPA and MEPA documentation with a scoping process, including publication of the *Southwest Transitway Scoping Summary Report* in January 2009 (HCRRA, 2009).¹⁴ The NEPA and MEPA scoping process resulted in the refinement of alternatives for consideration, concluding that five LRT alternatives would be examined in the Draft EIS, along with the Enhanced Bus and No Build alternatives (see 2.2.3 for a description of the Draft EIS process).

2.2.2.3 Identification of the Locally Preferred Alternative

This section describes the evaluation and identification of the LPA from the set of alternatives recommended for further study as a result of the AA. The LPA screening evaluation methodology built on information generated during the Southwest Transitway AA process, refining it to reflect updated local comprehensive and transportation plans, refined conceptual engineering plans, and an inventory of potentially affected environmental resources. The screening evaluation included the following four categories:

1. Planning compatibility – defined as the compatibility of the Southwest Transitway LRT alternatives with local and regional plans
2. Performance – defined as ridership, cost effectiveness, and efficiency
3. Implementation Factors – defined as ROW impacts, constructability, impacts to the existing transportation system, and permitting requirements
4. Critical Environment Resources – defined as the presence of cultural, natural, water, and geologic resources; hazardous/regulated materials; and potential noise and vibration impacts.

Exhibit 2.2-6 summarizes the evaluation. These results indicated that the ability of LRT 3A to serve and enhance the planned commercial and mixed use development in the Golden Triangle/Opus area is a significant differentiator. Therefore, LRT 3A was recommended for selection as the LPA because, based on the information at that time, it best met the Southwest Transitway Project's Purpose and Need Statement as expressed by the goals of improving mobility, providing a cost-effective and efficient travel option, preserving the environment, protecting quality of life, and supporting economic development.

Planning Compatibility

LRT 1A was determined to be compatible with land use and transportation plans of Minneapolis, St. Louis Park, and Hopkins but was incompatible with comprehensive plans of Minnetonka and Eden Prairie. The LRT 3A Alternative was determined to be compatible with land use and transportation plans in all communities, Hennepin County, and Metropolitan Council transportation plans along their eastern segments. LRT 3C-1 and LRT 3C-2 were determined to be compatible with all local plans except those of Minneapolis.

¹⁴ On September 25, 2012, the HCRRA amended the Southwest Transitway Southwest Scoping Summary Report (which serves as the Scoping Decision Document under MEPA) to include the impacts of relocating freight rail for the four build alternatives and including a collocation alternative where freight rail, light rail and the commuter bike trail collocate, share a common corridor, between Louisiana Avenue and Penn Avenue. The amendment was authorized with approval of Board Action Request 12-HCRRA-0049. Notice of the amendment to the scoping report was issued in the Environmental Quality Board Monitor on October 15, 2012.

EXHIBIT 2.2-6

Locally Preferred Alternative Summary Evaluation

	Planning Compatibility	Transit System	Ridership	Cost	Implementation Factors	Critical Environmental Resources	Summary
LRT 1A	○	○	○	○	○	○	○
LRT 3A	○	○	○	○	○	○	○
LRT 3C-1 (Nicollet Mall)	●	●	○	●	●	●	●
LRT 3C-2 (11th/12th St.)	●	○	○	●	●	●	●

Source: Southwest Transitway Draft EIS; 2012.

Performance

Based on preliminary travel demand modeling, all four LRT alternatives had strong ridership projections and showed travel time benefits over the Enhanced Bus Alternative. Therefore, the selection of the LPA focused primarily on criteria other than ridership. Differences in capital cost was a key differentiator among the alternatives. In 2017 dollars (based on the conceptual designs at that time), LRT 3C-1 (Nicollet Mall) and LRT 3C-2 (11th/12th Street) would cost approximately \$500 million more than LRT 3A, and approximately \$800 million more than LRT 1A. The differences in ridership and travel time benefits between the “C” alternatives and the “A” alternatives were determined to be insufficient to offset the greater capital cost and it was determined that the “C” alternatives would be unlikely to qualify for federal funding without major revisions.

The alternatives’ projected performance relative to the existing and future transit service indicated that each would have different benefits and drawbacks. The LRT 1A, LRT 3A, and the LRT 3C-2 (11th/12th Street) alternatives would be capable of fully integrating with both the Hiawatha and Central Corridor LRT lines, while the LRT 3C-1 (Nicollet Mall) Alternative would not. The LRT 3C-1 (Nicollet Mall) and LRT 3C-2 (11th/12th Street) alternatives would both provide duplicate transit service to saturated transit markets in the Uptown Minneapolis area. Service duplication has several consequences, including higher operating costs and sub-optimal resource allocation and utilization and reduced transit ridership increases. LRT 3C-1 (Nicollet Mall) and LRT 3C-2 (11th/12th Street) could not replace the existing bus service operating in Midtown Corridor because this would be detrimental to the existing service levels and disenfranchise current transit riders. Although LRT 3C-1 (Nicollet Mall) and LRT 3C-2 (11th/12th Street) would increase the span and frequency of service in other sections of the corridor, they would operate at a lower service frequency than the current bus service in the Midtown area. The LRT 3C-1 (Nicollet Mall) Alternative would displace all local bus service from Nicollet Mall and disrupt bus operations on alternate streets. Further, it was determined that the LRT 3C-2 (11th/12th Street) alignment in downtown Minneapolis would likely result in efficiency impacts to the Marquette and 2nd Avenue South Transit Project (MARQ2), which was built and opened for operations in late 2009 using funding from the Federal Highway Administration Urban Partnership Agreement (UPA).

Outside of Minneapolis, along the western alignment of the LRT 1A Alternative in Minnetonka and Eden Prairie, the existing service characteristics, land use patterns, and socioeconomic characteristics the analysis indicated that this area would not be a high transit trip generator, and would be unlikely to generate more transit trips in the future. Of the four LRT alternatives, the numbers of people, households, and jobs within a one-half mile radius of the proposed stations was determined to be highest along the LRT 3C-1 (Nicollet Mall) and LRT 3C-2 (11th/12th Street) alternatives. Generally, accessibility was determined to be greatest along the three LRT 3 alternatives, aided by connectivity to the major employers and denser residential areas in Minnetonka and Eden Prairie. To summarize, it was determined at that time that may that the “A” alternatives have less interaction with the current transit network, but would be less disruptive to the

current transit network and provide enhanced transit service to areas currently underserved by the network.

Implementation Factors

The factors, including costs of acquiring ROW, construction complexity, and permitting, were found to favor LRT 1A and LRT 3A over LRT 3C-1 (Nicollet Mall) and LRT 3C-2 (11th/12th Street). Simpler construction, fewer ROW acquisitions, and generally simpler permitting requirements would reduce approval and construction schedule risks for LRT 1A and LRT 3A.

Presence of Critical Environmental Resources

Preliminary review of environmental resources performed at that time indicated that fewer resources would be present along LRT 1A and LRT 3A; therefore, these alternatives would pose less environmental risk than LRT 3C-1 (Nicollet Mall) and LRT 3C-2 (11th/12th Street). It was further determined that the “C” alternatives would have a greater number of known historic resources, contaminated properties, and potential noise and vibration receptors than the “A” alternatives.

Recommendation

The evaluation of alternatives resulted in a recommendation of LRT 3A as the LPA. On October 20, 2009, a public hearing on the recommended LPA was held before the HCRRA. Approximately 30 people testified. On November 3, 2009, the HCRRA Board recommended alternative LRT 3A be selected as the LPA for the Southwest Transitway for inclusion in the Metropolitan Council’s 2030 TPP. This action came as a result of the AA led by HCRRA, as well as the cities along the alignment. A 45-day public comment period for the proposed amendment to the Council’s 2030 Transportation Policy Plan (TPP) selecting LRT on the Kenilworth-Opus-Golden Triangle alignment (Alternative 3A) as the locally preferred alternative (LPA) for the Southwest Transitway was held between March 8th, 2010 and April 22, 2010. A public hearing on the proposed TPP amendment was held before the Metropolitan Council’s Transportation Committee on April 12, 2010. On May 26, 2010, the Metropolitan Council accepted the summary of public comment and adopted the amendment to the 2030 TPP, thereby concluding the AA phase.

2.2.3 Draft Environmental Impact Statement

This section provides a summary of the Southwest LRT Project’s preparation and publication of its Draft EIS. Additional detail on the Draft EIS scoping phases can be found in Section 2.1 of both the Draft EIS and the Supplemental Draft EIS. Section 2.3 of the Draft EIS provides a description of the alternatives evaluated within the Draft EIS. The Draft EIS evaluated five light rail alternatives, as well as the Enhanced Bus Alternative and the No Build Alternative. The Project’s LPA was incorporated into two of the alternatives considered: LRT 3A (Relocation); and LRT 3A-1 (Co-location). The Draft EIS documents the anticipated environmental impacts, costs, and benefits of the alternatives considered. It also includes a draft Section 4(f) Evaluation (addressing the potential use of and impacts to publicly owned parklands, recreation areas, open spaces, and historic and archaeological resources). FTA, Hennepin County and the Council published the Draft EIS in October 2012 and it was the subject of a public comment period that concluded on December 31, 2012.

After completion of scoping and identification of the LPA, the Federal Transit Administration (FTA) determined that the Project’s Draft EIS should address whether to: (1) relocate Twin Cities & Western (TC&W) freight trains currently operating along the Canadian Pacific (CP)-owned Bass Lake Spur and the HCRRA-owned Cedar Lake Junction (locally referred to as the Kenilworth Corridor and referred to as such throughout this Supplemental Draft EIS) to the CP-owned MN&S Spur and BNSF-owned Wayzata Subdivision (included in LRT 1A, LRT 3A, LRT 3C-1, and LRT 3C-2, and referred to as “relocation”); or (2) continue to operate the TC&W freight trains along the Bass Lake Spur and Kenilworth Corridor alongside the proposed light rail alignment and stations (included in No Build Alternative, Enhanced Bus Alternative, and LRT 3A-1, and referred to as “co-location”).

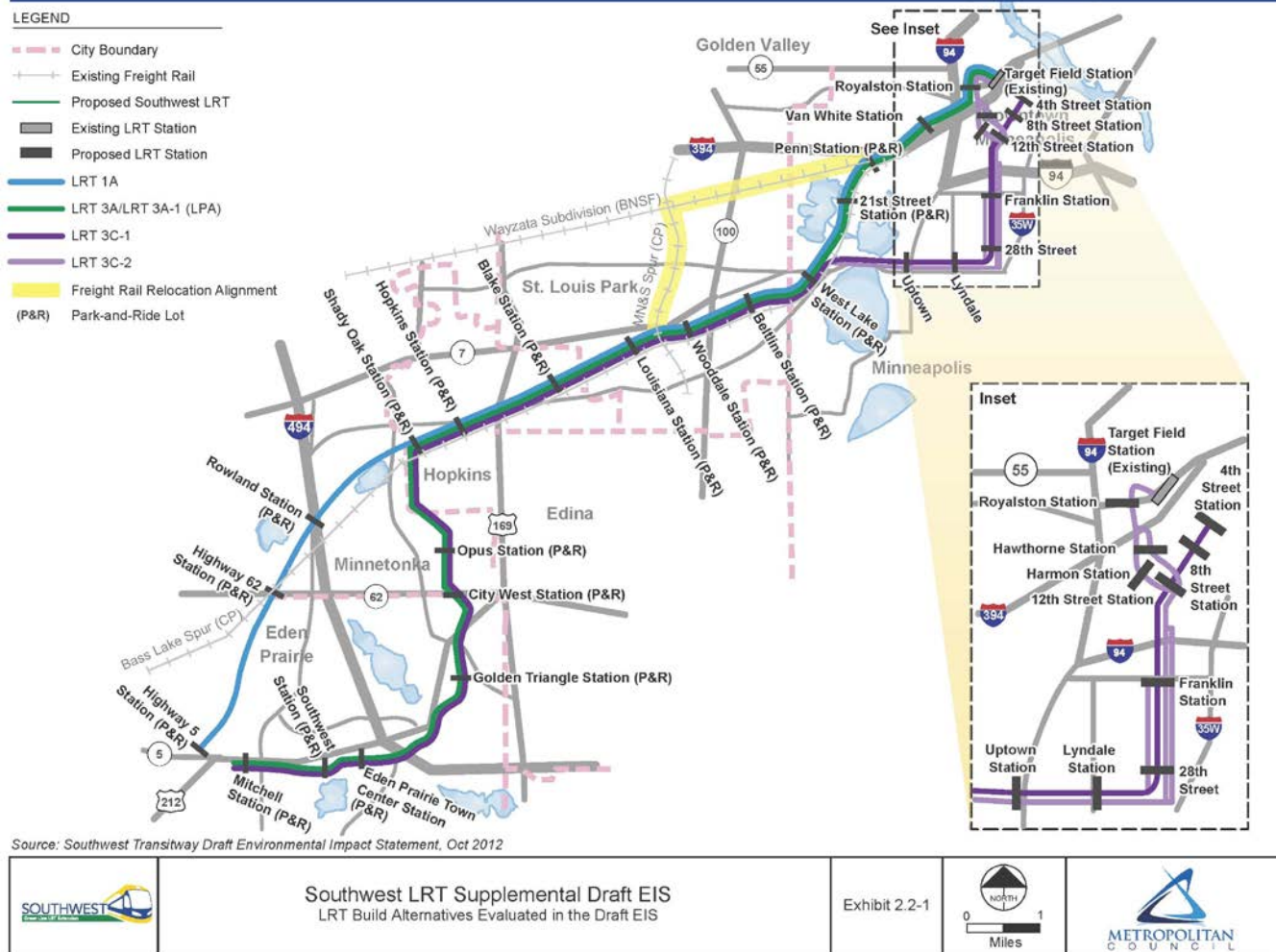
The Draft EIS was subsequently published on October 12, 2012, and the public comment period concluded on December 31, 2012. The Draft EIS examined seven alternatives, including the No Build Alternative, the Enhanced Bus Alternative, and five light rail transit (LRT) alternatives (LRT 1A, LRT 3A, LRT 3A-1, LRT 3C-1,

and LRT 3C-2). These seven alternatives are described in Section 2.3 of the Draft EIS and briefly described below. The LRT build alternatives are illustrated on Exhibit 2.2-7 of this Final EIS, and Section 2.3 of the Draft EIS provides additional detail, in particular, the LRT Build Alternatives are described in Section 2.3.3 of the Draft EIS:

- **The No Build Alternative**, required under the NEPA and MEPA processes, would provide planned and programmed transit facilities and operations identified in the region's fiscally constrained transportation plan (see Section 2.3.1 of the Draft EIS). In summary, the No Build Alternative would provide additional express and local bus service on existing facilities, including operation on the regional network of bus shoulder lanes.
- **The Enhanced Bus Alternative** would provide additional express routes, new limited-stop service, and enhanced bus facilities in Hopkins. Under the Enhanced Bus Alternative, combined bus stops and park-and-ride lots would be located in the vicinity of the intersection of Mitchell Road and Highway 212 and at the existing SouthWest Transit Center. These facilities would be connected to downtown Minneapolis via two new limited-stop bus lines and two existing SouthWest Transit express bus lines. The Enhanced Bus Alternative is described in Section 2.3.2 of the Draft EIS, which includes a description of the alternative's bus service plan and routes.
- **LRT 1A** would include a double-tracked light rail line between Minneapolis and Eden Prairie, generally within HCRRA-owned right-of-way. This alternative would require relocation of existing freight rail operations from a portion of the Bass Lake Spur and the entire Kenilworth Corridor to the MN&S Spur and Wayzata Subdivision. New right-of-way would be required near Penn Avenue to serve the Van White and Royalston stations in Minneapolis before connecting into the METRO Blue Line corridor in downtown Minneapolis and interlining with other LRT service. This alternative would include 14 new light rail stations.
- **LRT 3A**, which included the LPA, would result in a double-tracked light rail line between Minneapolis and Eden Prairie. This alternative would require relocation of existing freight rail operations from a portion of the Bass Lake Spur and the entire Kenilworth Corridor to the MN&S Spur and Wayzata Subdivision. Seventeen light rail stations were included as part of this alternative. Under this alternative, the proposed light rail alignment would run through the Golden Triangle and Opus employment areas in Eden Prairie. In St. Louis Park and Hopkins, the alignment would use HCRRA's Southwest LRT Trail. In Minneapolis, the alignment would use space within the Kenilworth Corridor. Near Penn Avenue, the alternative would require new light rail right-of-way to serve the Van White and Royalston stations in Minneapolis before connecting with the METRO Blue Line in downtown Minneapolis.
- **LRT 3A-1**, which included the same light rail service improvements as LRT 3A, was developed to examine the implications of co-locating the existing freight rail service and multiple-use path with the proposed light rail alignment and stations. LRT 3A-1 includes the same light rail alignment and stations that comprise LRT 3A; however, freight rail service currently operating in the Bass Lake Spur and Kenilworth Corridor would not be relocated.
- **LRT 3C-1** would include a double-tracked LRT line between Minneapolis and Eden Prairie, connecting 20 proposed light rail stations. This alternative would run through the Golden Triangle and Opus employment areas in Eden Prairie. In St. Louis Park and Hopkins, the alignment would use HCRRA's right-of-way. In Minneapolis, the light rail alignment would use space within the Midtown Corridor. The proposed light rail alignment would provide connections to the METRO Blue Line at 5th Street in downtown Minneapolis but would not interline with another LRT line. This alternative would require relocation of existing freight rail operations from a portion of the Bass Lake Spur and the entire Kenilworth Corridor to the MN&S Spur and Wayzata Subdivision.

EXHIBIT 2.2-7

LRT Build Alternatives Evaluated in the Draft EIS



- **LRT 3C-2** would duplicate the alignment and station locations of LRT 3C-1, differing only in the westernmost entry to downtown Minneapolis. Multiple north-south links were considered to connect the Midtown Segment of LRT 3C-2 with downtown Minneapolis, including Park and Portland avenues. Under LRT 3C-2, the light rail alignment would interline with the METRO Blue Line in downtown Minneapolis. This alternative would require relocation of existing freight rail operations from a portion of the Bass Lake Spur and the entire Kenilworth Corridor to the MN&S Spur and Wayzata Subdivision.





















































The potential environmental impacts of these seven alternatives were evaluated in the Draft EIS (LRT 3A was identified as the LPA in the Draft EIS¹⁵). HCRRA and FTA conducted a public comment period on the Draft EIS, which extended from October 12 to December 31, 2012, and included three public hearings.

Chapter 11 of the Draft EIS included an evaluation of the alternatives considered within the Draft EIS. Exhibit 2.2-8 summarizes the results of that evaluation.

¹⁵ In the Draft EIS, the transit improvements included in LRT 3A and LRT 3A-1 are coupled with the proposed relocation or co-location of TC&W freight trains currently operating along the Bass Lake Spur and the Cedar Lake Junction (locally referred to as the Kenilworth Corridor). LRT 3A includes the proposed relocation of TC&W trains to the MN&S Spur and Wayzata Subdivision, while LRT 3A-1 includes the continued operations of TC&W freight trains currently operating along the Bass Lake Spur and Kenilworth Corridor. While the Draft EIS notes that LRT 3A-1 is identical to LRT 3A in the transit service it would provide (see page ES-23 and Chapter 2 of the Draft EIS), it only identifies LRT 3A as the LPA (see pages 2-31 and 2-41 of the Draft EIS for examples). The LPA is a subset of both LRT 3A and LRT 3A-1 of the Draft EIS; therefore, this Supplemental Draft EIS clarifies that the Project's LPA is included within both LRT 3A and LRT 3A-1.

EXHIBIT 2.2-8

Summary of Evaluation of Alternatives within the Draft Environmental Impact Statement

	No Build	Enhanced Bus	LRT 1A	LRT 3A (LPA)	LRT 3A-1 (Co-location)	LRT 3C-1 (Nicollet Mall)	LRT 3C-2 (11th/12th Street)
Goal 1: Improve Mobility							
							
Goal 2: Provide a cost-effective, efficient travel option							
							
Goal 3: Protect the environment							
							
Goal 4: Preserve and protect the quality of life in the study area and the region							
							
Goal 5: Support economic development							
							
Goal 6: Support economically competitive freight rail system							
							
Overall Performance							
							
 does not support goal  somewhat supports goal  supports goal							

Source: Southwest Transitway Draft EIS.

In summary, the evaluation in the Draft EIS found that at that time, based on the definition and environmental analysis of the alternatives included in the Draft EIS, that LRT 3A (LPA) would best meet the Southwest Transitway Project's Purpose and Need Statement (as expressed by the goals of improving mobility, providing a cost-effective and efficient travel option, preserving the environment, protecting quality of life, supporting economic development, and developing and maintaining a balanced and economically competitive multimodal freight system). In addition, LRT 3A (LPA) would minimize construction-related impacts. The implementation of LRT 3A (LPA) would introduce new elements to the Southwest Transitway study area resulting in environmental impacts as presented in the Draft EIS. Further, the evaluation in the Draft EIS found that LRT 3A (LPA) would result in benefits that could not be achieved under the No Build or Enhanced Bus Alternatives (e.g., the introduction of an exclusive transit right-of-way throughout the corridor to reduce transit travel times and increase transit reliability). However, the evaluation in the Draft EIS also found that the benefits associated with those new elements associated with LRT 3A (LPA) could not be achieved without some adverse environmental impacts. Specific effects associated with the freight rail relocation portion of the Southwest Transitway Project are included in Exhibit 2.2-7 and applied at the time not only to LRT 3A (LPA) but also to LRT 1A, LRT 3C-1 (Nicollet Mall) and LRT 3C-2 (11th/12th Street). These effects include:

- A slight increase in freight rail traffic along the MN&S Spur resulting in sporadic traffic queues at roadway and freight rail track at-grade crossings
- A slight increase in freight rail traffic along the MN&S Spur resulting in noise impacts of which all severe noise impacts would be mitigated through the institution of a quiet zone

- Potential for additional water resource impacts along the MN&S Spur and the BNSF Wayzata Subdivision
- Potential to encounter more hazardous and regulated materials sites along the MN&S Spur and the BNSF Wayzata Subdivision

The evaluation of alternatives in the Draft EIS found at that time and based on the definition of alternatives and environmental analysis in the Draft EIS that the overall benefits derived from LRT 3A (LPA)—including increased transit ridership and enhanced mobility— would outweigh the potential adverse environmental impacts. Specifically, the Draft EIS evaluation preliminarily found that LRT 3A (LPA) would:

- Improve access and mobility to the jobs and activity centers in the Minneapolis central business district (CBD), as well as along the length of the corridor for reverse-commute trips to the expanding suburban employment centers.
- Provide a competitive, cost-effective travel option that will attract choice riders to the transit system. The competitive travel time for LRT 3A (LPA) is attributed to the diagonal nature of the line compared to the north-south/east-west orientation of the roadway network and to the increasing levels of congestion of the roadway network.
- Provide a travel option that contributes to the quality of life and economic health of the study area and region, enhances access to public service and recreational facilities, and ensures fair distribution of benefits and adverse effects of the Project for the region, communities, and neighborhoods adjacent to the project area.
- Provide a travel option that supports economic development and redevelopment with improved access to transit stations, local sustainable development/redevelopment goals, facilitates more efficient land development patterns and saves infrastructure costs, and accommodates future regional growth in locations consistent with local plans and the potential for increased transit ridership.

2.2.4 Supplemental Draft Environmental Impact Statement

This section describes the Supplemental Draft EIS process and its components. The Supplemental Draft EIS was published on May 22, 2015. The FTA and the Council determined that design adjustments made to the LPA following publication of the Draft EIS had the potential to result in new adverse impacts as described below and needed to be evaluated in a Supplemental Draft EIS.

These design adjustments to LRT 3A and LRT 3A-1 were screened by FTA and the Council to determine whether they individually or collectively warranted evaluation in terms of social, environmental, economic, and transportation impacts under NEPA. The Project team, in coordination with FTA staff, reviewed each of the design adjustments to identify any substantive changes to LRT 3A and LRT 3A-1 not addressed in the Draft EIS. The review was based on NEPA and MEPA environmental review procedures to determine whether Project adjustments were substantial enough to warrant detailed study in the Supplemental Draft EIS (40 CFR 1502.9(c) and Minn. R. 4410.3000, subparts 3 and 5, respectively). During this process, the design adjustments were reviewed and screened based on the following questions:

- Do the design adjustments under evaluation introduce new alternatives not identified in the Draft EIS that meet the Project's purpose and need?
- Would the design adjustments likely cause new significant adverse impacts not disclosed in the Draft EIS?

Based on this assessment of adjustments made to LRT 3A and LRT 3A-1 since publication of the Draft EIS, FTA and the Council determined that there were no new reasonable alternatives identified through the design adjustment process that would meet the Project's Purpose and Need (see Chapter 1 of the Supplemental Draft EIS); however, because of the potential for new significant adverse impacts in the Eden Prairie Segment, the Hopkins OMF, and the St. Louis Park/Minneapolis Segment that were not addressed in the Draft EIS, FTA and the Council also determined that the proposed adjustments in these areas should be evaluated in a Supplemental Draft EIS. The design changes are shown in Exhibit 2.2-9 and include:

- **Eden Prairie Segment** - In general, the proposed light rail alignment and western and eastern stations in the Eden Prairie Segment were adjusted south to provide better connections to local activity centers, while avoiding or minimizing adverse impacts. The Eden Prairie Segment generally extends between just west of the intersection of Technology Drive and Mitchell Road, and just east of the intersection of Flying Cloud Drive and Valley View Road, as illustrated on Exhibit 2.2-10.
- **Proposed Hopkins Operations and Maintenance Facility (OMF) in Hopkins** - The Project includes a proposed OMF in the City of Hopkins, which was not one of the four potential OMF sites identified in the Draft EIS. The proposed Hopkins OMF would be within an existing office warehouse and light manufacturing development. It would occupy an approximately 15-acre site southwest of the intersection of 5th Street South and 15th Avenue South. In general, light maintenance activities and the storage of vehicles not in service would occur within enclosed structures, although some maintenance activities (such as moving vehicles) would occur outside of buildings. In general, the OMF site would be in operation 24 hours a day, 365 days a year.
- **St. Louis Park/Minneapolis Segment** - In the St. Louis Park/Minneapolis Segment, the LPA was adjusted to include the following:
 - A proposed light rail tunnel in the Kenilworth Corridor (generally between West Lake Street and the Kenilworth Lagoon)
 - Retention of existing freight rail service in the Kenilworth Corridor, with some modification to freight rail tracks to accommodate light rail
 - Adjustments to the location and capacity of proposed park-and-ride lots

These two segments and the OMF site are illustrated on Exhibit 2.2-11. Appendix F provides a detailed description of the design adjustment process, including descriptions of the design adjustments developed, evaluated, and screened.

New environmental impacts were detailed in Chapter 3 of the Supplemental Draft EIS for the following three areas: the Eden Prairie Segment, the Hopkins OMF, and the St. Louis Park/Minneapolis Segment. As noted in Section 2.5 of the Supplemental Draft EIS, the findings reached in the design adjustment process that occurred after publication of the Draft EIS led to adjustments to the Locally Preferred Alternative that would retain freight rail in the Kenilworth Corridor (LRT 3A-1). The Supplemental Draft EIS noted that, compared to the relocation of freight rail (LRT 3A), the co-location of freight rail and light rail in the Kenilworth Corridor (LRT 3A-1) would:

- Result in less harm to Section 4(f)-protected properties (compared to the displacement of the Park Spanish Immersion School playground with freight rail relocation)
- Permanently displace approximately six fewer acres of wetland
- Avoid the displacement of residents and businesses in St. Louis Park and Minneapolis (compared to the full acquisition of approximately 32 residential, commercial, and institutional parcels under freight rail relocation)
- Minimize the reconstruction of freight rail tracks and related adverse impacts
- Include the Southerly Connector replacing the Skunk Hollow switching wye that will facilitate freight rail movements
- Include design refinements that will help avoid diminishing the potential for TOD around light rail stations in close proximity of freight rail tracks
- Provide safe and convenient pedestrian crossings of freight rail tracks at the proposed Wooddale, Beltline, and 21st Street stations

Include bicycle and pedestrian improvements and the study of potential traffic-related improvements that will improve access to light rail stations and across the light rail and freight rail alignment in the Kenilworth

EXHIBIT 2.2-9

Southwest LRT Corridor and Supplemental Draft EIS Study Areas



EXHIBIT 2.2-10
Project Overview Eden Prairie Segment

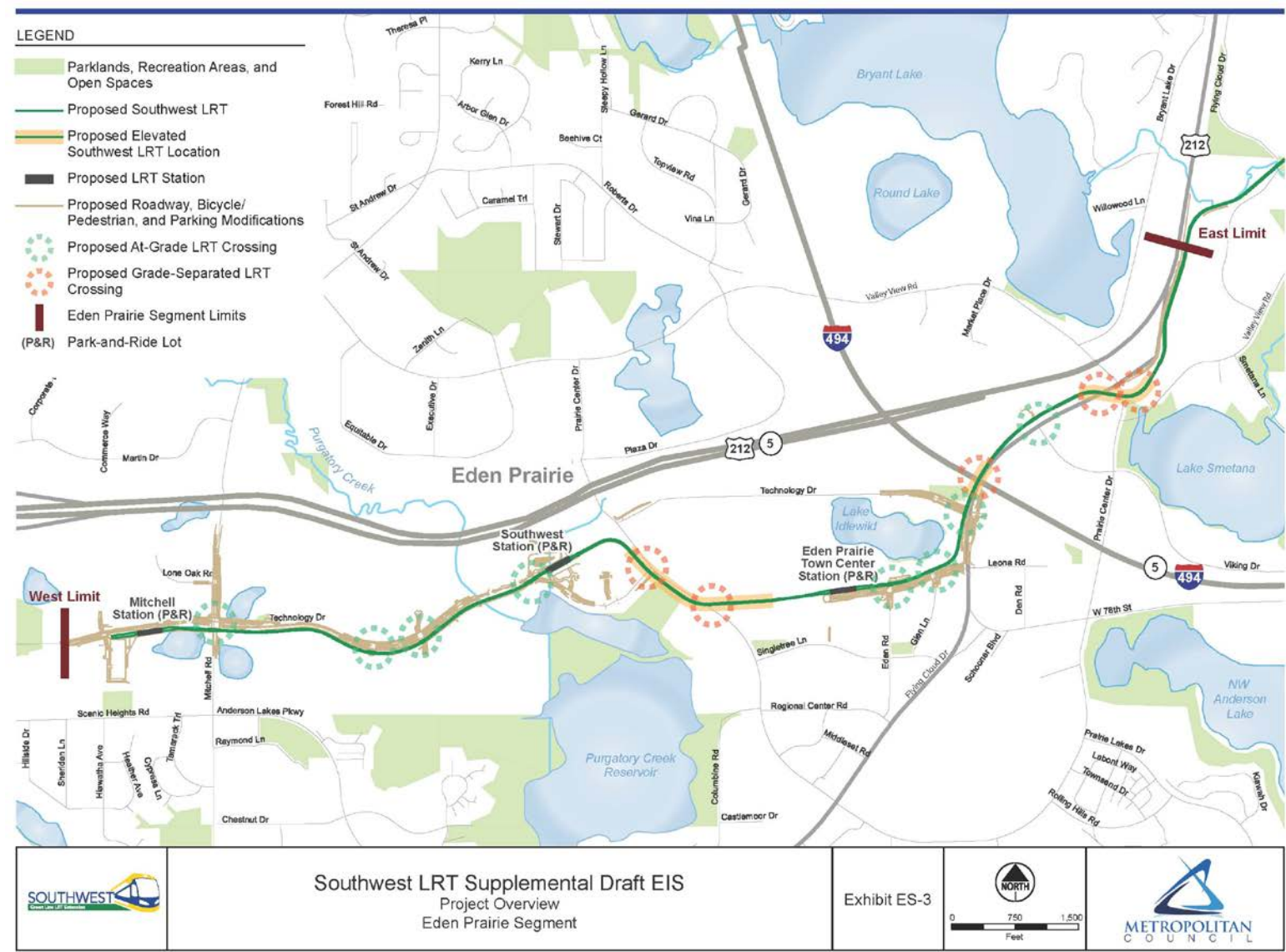
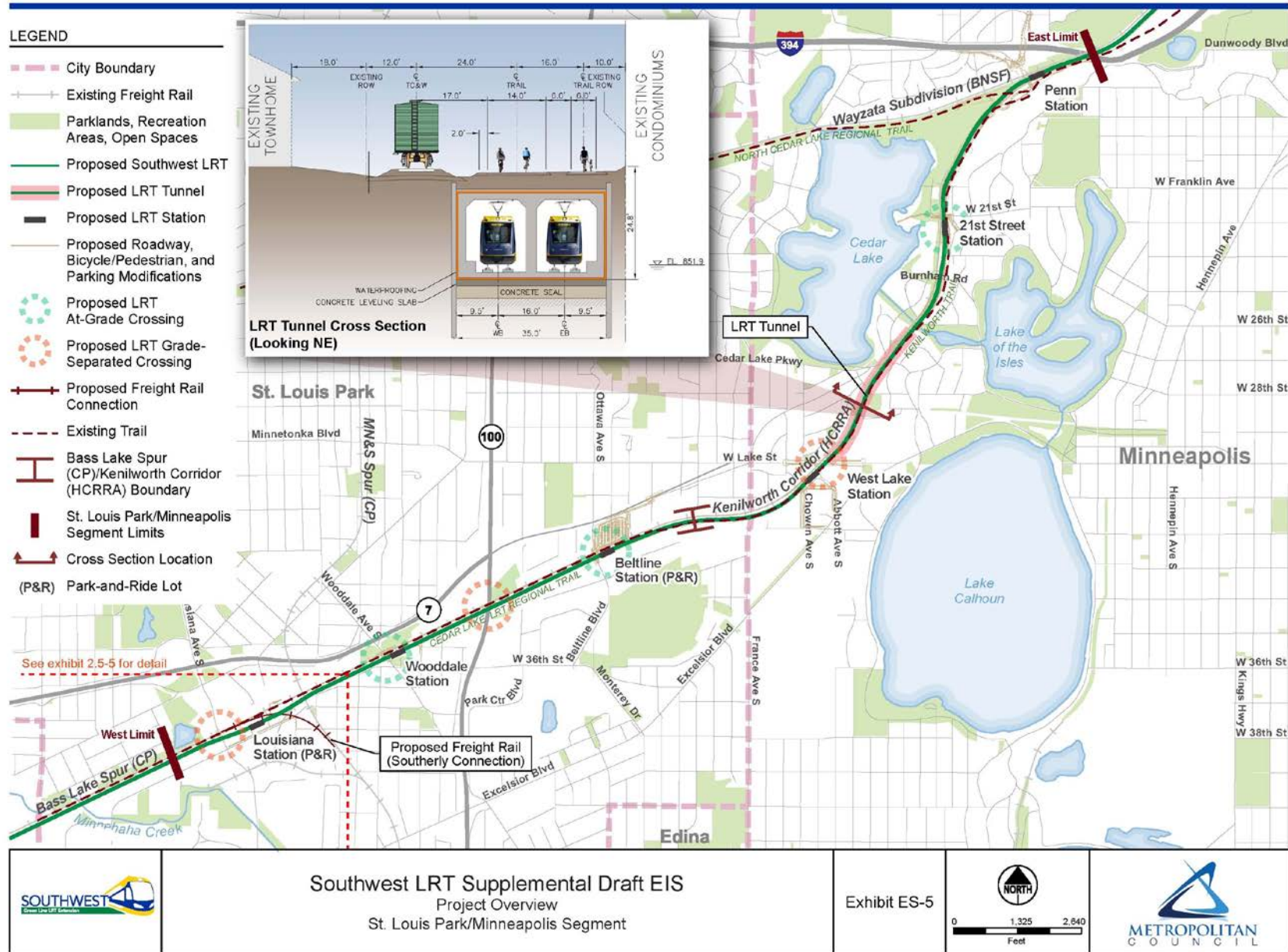


EXHIBIT 2.2-11

Project Overview St. Louis Park/Minneapolis Segment



Corridor (compared to the construction of a berm for the freight rail alignment in St. Louis Park that would tend to divide a residential and commercial neighborhood)

Following is a summary of the design adjustments evaluated within the Supplemental Draft EIS (see also Appendix F for additional detail).

2.2.4.1 Eden Prairie Segment

The Supplemental Draft EIS considered a wide range of design adjustments to respond to comments and concerns submitted by the City of Eden Prairie and others to minimize impacts, increase transit ridership, and reduce Project costs (see Exhibit 2.2-10 and Appendix F). The Project team undertook a three-step evaluation process to consider engineering and design adjustments.

Post-evaluation, the Council approved the following adjustments to be incorporated into the LPA:

- Combine the Comprehensive Plan and Singletree Lane alignments. Retain the Technology Drive alignment in the West subsegment, which moves the western terminus station from immediately south of Highway 212 west of Mitchell Road to immediately south of Technology Drive west of Mitchell Road.
- Retain the Comprehensive Plan alignment adjustment in the East subsegment and dismiss the Singletree Lane alignment adjustment.
- In the West subsegment, the team concluded that the Technology Drive alignment would provide better placement of the Mitchell Station relative to existing and planned development. In the East subsegment, relative to the Singletree alignment, the team concluded that the Comprehensive Plan alignment adjustment would result in fewer potential traffic conflicts and fewer property acquisitions and business displacements.

2.2.4.2 Operations and Maintenance Facility

The Draft EIS noted that the light rail alternatives would need an OMF for light vehicle maintenance, running repairs for the LRVs, and storage of vehicles not in service. The Draft EIS listed the preferred characteristics for an OMF site, and identified 14 sites that met the Project's requirements. Four of the sites were carried forward and fully evaluated in the Draft EIS. Following the publication of the Draft EIS, the Council determined that additional sites should be identified and evaluated.

The Supplemental Draft EIS detailed the process of identifying approximately 30 additional sites in an initial evaluation phase, and narrowing the list based on criteria to seven OMF sites (see Appendix F for an illustration of those sites). The remaining seven underwent an operational analysis and public and jurisdictional review, narrowing the site to two prospects.

A fourth step evaluation identified the Hopkins OMF 9A as the OMF to be incorporated into the Project (see Exhibit 2.2-9). It was determined that the incorporation of the Hopkins OMF should result in improved out-of-service operations and operating cost savings due to its relatively central location on the proposed light rail line.

2.2.4.3 St. Louis Park/ Minneapolis Segment

Design adjustments to the St. Louis Park/Minneapolis Segment in the Supplemental Draft EIS (see Exhibit 2.2-11) dealt with two adjustments, the first regarding freight operations and the second regarding light rail alignments.

The freight-focused design adjustments focused on whether the Project should include the relocation of TC&W freight trains currently operating along the Bass Lake Spur and Kenilworth Corridor to sections of the MN&S Spur and Wayzata Subdivision (LRT 3A); or the continued operation of TC&W freight trains along the Bass Lake Spur and Kenilworth Corridor (LRT 3A-1). The four-step evaluation concluded with the Council identifying the Shallow LRT Tunnels – Over Kenilworth Lagoon as the preferred design change. The Council found that, relative to the other options considered, the Shallow LRT Tunnels – Over Kenilworth Lagoon adjustment provided the best balance of costs, benefits, and environmental impacts, and in doing so found that it best met the Project's Purpose and Need.

As described in Appendix F, the fourth step of the design adjustment process for the St. Louis Park/Minneapolis Segment was initiated by responding to a request from the Governor of Minnesota. This first component of the fourth step involved the preparation of the independently-prepared *SWLRT Engineering Evaluation of Freight Rail Relocation Alternatives* (TranSystems, 2014).¹⁶ As requested by the Governor, the purpose of the independent study commissioned by the Council was to provide a comprehensive analysis of prior freight rail relocation designs that would provide for the rerouting of TC&W freight rail trains out of the Kenilworth Corridor and identification of new design adjustments or concepts. In particular, the study consisted of an analysis of the technical, safety, and operational considerations of eight options that would allow for the rerouting of TC&W freight trains that were developed in prior freight rail studies and two additional concepts developed by the Southwest LRT Project Office (SPO) during the first step of the four-step evaluation process. The scope of the analysis generally covered the following: identification of operational cost drivers; identification of community and other impacts; and assessment of possible operational adjustments.

In summary, the independent report includes the following (see Appendix F for illustrations of the referenced freight rail alignments):

1. The study finds that five of the freight rail relocation options evaluated are “fatally flawed” for a variety of reasons, primarily related to an assessment showing that the affected freight rail operators would not find them acceptable due to economic, operations, or safety concerns. As such, the report does not recommend any additional study of those five options.
2. In addition, the independent report does not recommend further study of two other freight rail options that it evaluated, primarily due to significant impediments to their implementation. The final report finds that, while the Brunswick Central alignment was acceptable to the affected freight rail operator from an operational, economic, and safety perspective, it was dismissed from further study (in step three of the evaluation) due to its wide range of adverse impacts. The final report also finds that an option termed the MN&S South, which would connect the Bass Lake Spur south to the MN&S Spur, might be able to be designed to meet engineering standards, but that it “would face severe obstacles with respect to property acquisition and permitting...” (TranSystems, 2014; page 34). Finally, due to several identified implementation challenges, the report does not recommend further study of the Midtown Corridor. The identified challenges include: likely “significant” capital costs; the corridor is listed on the National Register of Historic Places and two bridges on the alignment are on park land; and it may “complicate or thwart plans for a streetcar in the corridor.”

The independent study by TranSystems also resulted in the identification of an additional freight rail relocation alignment in the vicinity of St. Louis Park High School that could potentially accommodate the relocation of freight rail from the Kenilworth Corridor to the MN&S Spur and the Wayzata Subdivision. The report recommends that this design adjustment receive further consideration by the Council. This freight rail modification design adjustment, which has many similarities to other options previously developed and considered by the Council, was termed the MN&S North design adjustment.

In considering the MN&S North design adjustment described within the independent report, the Council dismissed MN&S North adjustments from further study based on the following findings. First, the MN&S North adjustments were opposed by the affected freight rail operator (TC&W), primarily based on safety and operational concerns, including three reversing curves in the proposed freight rail alignment that would be especially problematic (the operator did not express similar concerns about the Shallow LRT Tunnels – Over Kenilworth Lagoon adjustment). Second, the advantage of the Shallow LRT Tunnels – Over Kenilworth Lagoon, relative to the MN&S North adjustment, is that it would avoid the following: the potential displacement of approximately six residences and seven businesses; the acquisition of some St. Louis Park

¹⁶ The report was funded by the Council and the Council submitted comments on the draft report during its public comment period. However, the report was independently prepared by TranSystems and the Council did not have editorial control over the report. See Appendix D for details on how to access the final report.

High School property; additional cost increases due to project delay of approximately \$45 to \$50 million; closure of local streets; and extension of the project's construction schedule by up to two years.¹⁷

In July 2014, the Council and the City of Minneapolis proposed a set of additional adjustments to the design of the Shallow LRT Tunnels – Over Kenilworth Lagoon option. The proposed additional design adjustments were outlined in a memorandum of understanding between the Council and the City, and approved by the Council. The additional design elements reduce Project capital costs by eliminating the northern of the two proposed light rail tunnels in the Kenilworth Corridor, and incorporate a variety of bicycle and pedestrian improvements associated with proposed light rail stations in the City of Minneapolis.

2.2.5 Design Adjustments After Publication of the Supplemental Draft EIS

Since the completion of the Supplemental Draft EIS in 2015, the Council advanced the level of design detail for the Project. This additional level of design detail resulted in better understanding of the Project design, impacts, and avoidance, minimization, and mitigation measures. Changes to the design were made to better avoid impacts, integrate mitigation measures, and allow for cost reductions associated with the Project. On April 27, 2015, the Council released a revised Project cost estimate of approximately \$1.994 billion – an approximately \$341 million increase over the year-of-expenditure budget. The additional costs were primarily related to poor ground conditions along the proposed Southwest light rail line, soil contamination in St. Louis Park and Hopkins, Project delays due to additional studies, and property acquisitions and relocations.

To address the revised Project cost estimate, the Council's CMC and Project staff developed and evaluated a variety of options, in consultation with the Project's local participating jurisdictions. The evaluation of options focused on three key criteria: cost savings incurred; Project ridership; local jurisdiction consensus. CMC meetings held on May 20, June 3, June 24, and July 1, 2015, included review, discussion, and evaluation of the various options developed, which resulted in a recommendation by the CMC to the Council on July 1, 2015.¹⁸ Related recommendations to the Council were also adopted by the BAC and CAC on June 17 and June 30, 2015, respectively.

On July 8, 2015, the Metropolitan Council adopted design adjustments to address the increased cost estimates. In doing so, the Council considered recommendations from the CMC, BAC, and CAC. In summary, the Council identified \$250 million in reductions to the Project's scope and budget. The reductions in the Project's scope included: the elimination of the Mitchell Station (which was identified as an option in the Supplemental Draft EIS) and deferral of the Eden Prairie Town Center Station (until after 2020 and before 2040); the reduction of five new light rail vehicles; the reduction of park-and-ride capacity from 3,834 spaces to 2,487 spaces; the reduction in the size of the proposed Hopkins OMF (with future expansion capacity on-site); elimination of station artwork; and reductions in landscaping and off-platform station furnishings. The identified cost savings measures were identified, developed, and analyzed in consultation with the Project's local participating agencies. In addition to the reductions in scope and budget, the Council committed to seek approximately \$90 million in additional funds to cover the remaining short-fall. Section 2.3 includes the current base-year capital cost estimates for the LPA, LRCIs, and the Project – similar year-of-expenditure capital costs are summarized in Chapter 7, including the Project's revised capital finance plan.

2.3 Capital Cost Estimates

This section provides capital cost estimates for the Project, including the LPA and LRCIs. Capital costs for operations and maintenance associated with the Project are included in Section 2.4. This chapter uses 2016

¹⁷ Approximately one year of the anticipated delay is for the pursuit of an adverse abandonment with the STB for existing freight rail service on the CP-owned Bass Lake Spur, east of the MN&S Spur, and the HCRRA-owned Kenilworth Corridor. The outcome and actual duration of this process would remain uncertain until conclusion of the process. Approval by STB could require TC&W and CP to cease freight rail operations in the Kenilworth Corridor and relocate those operations from the current location.

¹⁸ For a record of the CMC's meeting agendas, minutes, and presentation material see <http://www.metrocouncil.org/Transportation/Projects/Current-Projects/Southwest-LRT/SWLRT-Committees/Corridor-Management-Committee.aspx>.

dollars. Chapter 7 of this Final EIS provides capital cost estimates in year-of-expenditure dollars, which include escalation of costs due to inflation and financing costs.

The capital cost estimate (using 2016 dollars and excluding finance charges) for the LPA is approximately \$1.711 billion. This estimate includes the full cost of capital improvements based on the Project's operating plan for 2040. Capital cost estimates are based on preliminary engineering plans for the Project (see Appendix E), including the purchase of 27 additional LRVs (adding 24 vehicles into service and three vehicles as spares). Table 2.3-1 includes LPA cost estimate details.

TABLE 2.3-1

Base-Year Capital Cost Estimates of the LPA, by FTA Standard Cost Category (Base Year in 2016 Dollars, in Millions)^a

FTA Standard Cost Category	Base Year Costs (millions)
Guideway and Track Elements	\$365.504
Stations, Stops, Terminals, Intermodal	\$66.192
Support Facilities: Yards, Shops, Administration Buildings	\$84.647
Sitework and Special Conditions	\$165.712
Systems	\$220.898
Right-of-Way, Land, Existing Improvements	\$206.580
Vehicles	\$117.219
Professional Services	\$273.009
Unallocated Contingency	\$159.834
Finance	\$51.634
Total	\$1,711.229

^a Does not include LRCIs.
Council (2016).

The cost estimate (using 2016 dollars) for the LRCIs is \$28.61 million. This estimate includes LRCIs in Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Hennepin County. Table 2.3-2 includes LRCI cost estimate details.

TABLE 2.3-2

Base-Year Capital Cost Estimates for Locally Requested Capital Investments (Base Year in 2016 Dollars, in Thousands)

Jurisdiction / Locally Requested Capital Investments	Base Year Costs (thousands)
Eden Prairie	
LRCI #1 N-S Roadway	\$1,984
LRCI #2 Trail from Golden Triangle Station	\$1,021
LRCI #3 SouthWest Station Trail	\$1,223
LRCI #4 Catenary Poles	\$793
LRCI #5 Decorative Street Lighting	\$136
LRCI #6 Decorative Fencing and Bridge Railing	\$1,708
LRCI #7 Planter Boxes	\$415
LRCI #8 Bridge Aesthetics Upgrade	\$1,947
LRCI #9 Embedded Track	\$611
LRCI #10 Public Plaza at Stations	\$1,278
LRCI #11 Technology Drive Extension	\$128
Minnetonka	
LRCI #12 Extension of 17th Avenue	\$477
LRCI #13 Guideway Profile Adjustment	\$1,552
Hopkins	
LRCI #14 17th Avenue Water Main and Sewer	\$142
St. Louis Park	
LRCI #17 Xenwood Avenue Underpass	\$4,837

Jurisdiction / Locally Requested Capital Investments	Base Year Costs (thousands)
LRCI #32 Beltline Blvd/CSAH 25 Improvements	\$1,301
Hennepin County	
LRCI #26 New Trail between LRT Tracks and CSAH 61	\$1,655
LRCI #27 Fiber Optic Cable	\$7,404
Total	\$28,613^a

Source: Council, LRCI cost estimates, September 2015.

2.4 Operations and Maintenance Cost Estimates

This section provides annual systemwide operation and maintenance cost estimates for the Project, including Metro Transit light rail, bus, paratransit, and Northstar; and SouthWest Transit bus, operations and maintenance. Chapter 7 of this Final EIS provides operating and maintenance cost estimates in year-of-expenditure dollars.

The cost estimate (using 2016 dollars) for annual systemwide operations and maintenance costs for the Project in year 2040 is \$700.10 million. This is \$39.45 million more than the No Build Alternative cost estimate in year 2040. The operations and maintenance cost estimates are based on the transit system described in Section 2.1, Definition of Alternatives, and are based on the proposed purchase of 27 additional LRVs (adding 24 LRVs into service and three LRVs as spares). Table 2.4-1 includes annual systemwide operations and maintenance cost estimate details.

TABLE 2.4-1

Annual Systemwide Operations and Maintenance Costs in 2040: No-Build Alternative and LPA (2016 dollars, in millions)^a

Operator/Operating and Maintenance Cost Category	No-Build Alternative	LPA
Metro Transit/MTS¹⁹		
Light Rail	\$89.370	\$116.861
Bus	\$465.459	\$467.762
Northstar	\$18.935	\$18.935
Paratransit (Metro Mobility & Transit Link)	\$69.985	\$69.985
Subtotal	\$643.749	\$673.543
SouthWest Transit		
Bus	\$17.796	\$27.454
Subtotal	\$17.796	\$27.454
Systemwide		
Total (all modes)	\$661.545	\$700.997

^a Including the METRO Blue Line extension and the METRO Orange Line (bus rapid transit).

Source: Southwest LRT Technical Report, Financial Analysis in Support of the Final EIS, August 2015.

¹⁹ Includes all other Twin Cities opt-out providers.

3 Environmental Analysis and Effects

3.0 Introduction

This chapter discusses the environmental-related analysis and effects associated with the No Build Alternative and the Southwest Light Rail Transit (LRT) Project (Project).¹ This chapter includes 17 environmental resource areas, each of which provides an overview of applicable methods and regulations, a description of the affected environment, an analysis of the environmental consequences that will result from the Project, and committed mitigation measures to address adverse environmental impacts. The analysis of impacts in each section covers long-term and short-term (construction) direct and indirect impacts, with the exception of Section 3.17, which addresses cumulative impacts related to the Project. This chapter includes the following sections:

- 3.1 Land Use
- 3.2 Economic Activity
- 3.3 Neighborhood and Community
- 3.4 Acquisitions and Displacements
- 3.5 Cultural Resources
- 3.6 Parks, Recreation Areas, and Open Spaces
- 3.7 Visual Quality and Aesthetics
- 3.8 Geology and Groundwater Resources
- 3.9 Surface Water Resources
- 3.10 Ecosystems
- 3.11 Air Quality and Greenhouse Gases
- 3.12 Noise
- 3.13 Vibration
- 3.14 Hazardous and Contaminated Materials
- 3.15 Electromagnetic Interference and Utilities
- 3.16 Energy
- 3.17 Cumulative Impacts

Chapter 2 provides a description of the No Build Alternative and the Project, both of which were used as the basis for the analysis within this chapter. Construction activities that will be associated with the Project are also described in Chapter 2. Chapter 4 addresses the transportation-related analysis and effects associated with the No Build Alternative and the Project. Appendix E includes the preliminary engineering plans for the Project and illustrates the extent of long-term and temporary construction-related improvements that will result from the Project. Following is a list and definition of key terms used throughout this chapter:

- **Long-term impacts** will continue to occur after construction is complete
- **Short-term impacts** will be associated with construction activities and will be temporary
- **Direct impacts** will occur at the same time and place as the proposed action
- **Indirect impacts** will occur later in time or will be further removed in distance from the proposed action
- **Study area** is the area where the impact analysis focused on, specific to each environmental category

¹ The Project, as evaluated in this Final EIS, includes both the Locally Preferred Alternative (LPA) and the Locally Requested Capital Investments (LRCIs) described in Sections 2.1.1 and 2.1.2. Exhibit 2.1-6 conceptually shows the components of the Project. As described in Section 2.1.1, the Eden Prairie Town Center Station and associated improvements are deferred and are not expected to be in place when the Project opens in 2020. The station and associated improvements are planned to be in place by 2040.

- **Limits of disturbance** is the area where the Project will result in permanent or temporary ground disturbances
- **Avoidance** is the act of avoiding impacts to or keeping away from something or someone
- **Minimization** is a measure to reduce the severity of adverse impacts
- **Mitigation** is a measure to alleviate adverse impacts that remain after minimization

A. Overview of the Project's Impacts

Table 3.0-1 provides a summary of the impacts for each environmental category within this chapter. Long-term and short-term impacts, project avoidance and minimization commitments, and mitigation measures are identified for each environmental category. See the corresponding sections of Chapter 3 for a more detailed description of the Project's anticipated impacts, avoidance and minimization commitments, and mitigation measures, as well as exhibits illustrating geographic features referenced in the table. Unless otherwise noted in this chapter's sections, there have been no major changes in the environmental analyses since publication of the Supplemental Draft EIS.

B. Overview of the No Build Alternative

This section provides a consolidated discussion of the No Build Alternative.² It includes an overview by environmental category of changes in existing conditions compared to conditions under the No Build Alternative in 2040. The No Build Alternative represents future conditions in 2040 within the corridor if the Project is not implemented and it provides the basis against which the Project is compared. The definition of the No Build Alternative includes all the proposed and funded projects in the TPP³ except the Project. That is, the No Build Alternative only differs from the Project in that the No Build Alternative does not include the construction and operation of the Project. Section 2.1.2 provides a more detailed description of the No Build Alternative, and Chapters 5 and 6 of the TPP list and illustrate respectively the funded highway and transit projects in the 2040 TPP that are included in the No Build Alternative (identified as Current Revenue Scenario Investments).

Following are some of the projects included in the No Build (2040) transportation networks that are used for travel demand forecasting and related analyses but that are not included in the existing (2010) transportation networks:

- Highways
 - I-35W Southbound from I-94 to 46th Street
 - Highway 100 from 36th Street to Cedar Lake Road
 - I-494 Capacity Enhancements
 - Reconstruction of the I-494/Highway 169 Interchange
- Transit
 - METRO Gold Line
 - METRO Red Line Extension
 - A-Line, Snelling Avenue Arterial Bus Rapid Transit
 - C-Line, Penn Avenue Arterial Bus Rapid Transit
 - Chicago Emerson-Fremont Arterial Bus Rapid Transit

² This section addresses conditions under the No Build alternative for the 16 environmental categories addressed in this chapter. Sections 3.11, Air Quality and Greenhouse Gas, and 3.16, Energy, also provide a quantitative comparison of the Project and the No Build Alternative. Chapter 4 addresses six transportation categories under the No Build Alternative and the Project.

³ If those projects are implemented, the sponsors of those projects would be responsible for complying with applicable federal and state environmental requirements, such as the National Environmental Policy Act (NEPA) and the Minnesota Environmental Policy Act (MEPA), including disclosure of the projects' environmental impacts.

Following is a summary of conditions under the No Build Alternative for the environmental categories addressed in this chapter, assessing differences under the No Build Alternative compared to the Project and describing key changes from existing conditions to conditions under the No Build Alternative in 2040.⁴

- **Land Use.** The No Build Alternative would not result in the direct conversion of land to a transportation use as a result of the Project, because light rail would not be extended into the study area. The No Build Alternative includes the existing transportation system plus funded projects in the TPP, as well as projected population and employment growth accommodated in adopted plans, but without the Project. Development projects (e.g., housing, commercial/retail, industrial) would generally occur to support the population and employment growth. While the No Build Alternative would not directly displace any residents or businesses, other transportation and redevelopment projects that would occur by 2040 could lead to displacements and changes in land uses. As noted in Table 3.1-4, the No Build Alternative is inconsistent with many of the regional land-use and transportation policies, because it would not develop a high-quality and high-capacity transit line connecting the corridor's highest-growth centers, nor is it consistent with the local plans that encourage increased density and/or transit-oriented development (TOD) land-use patterns in anticipation of the Project. The region's policies related to focused and compact growth, frequent transit service, connecting urban centers, and transportation alternatives to the single-occupant vehicle would not be fully implemented in the corridor. Therefore, the No Build Alternative would constrain transportation options in the corridor, potentially leading to more traffic congestion where higher density land uses are planned, and it could slow the rate of denser development in growth centers.
- **Economic Activity.** The No Build Alternative would not result in new short-term or long-term jobs that would be associated with construction and operation of the light rail in the corridor. The No Build Alternative would also not result in a decline of local jurisdiction property tax revenue that would be associated with the conversion of private property to a public transportation use under the Project. In the corridor, the No Build Alternative would have fewer transportation options and would tend to have longer and less reliable transit travel times. Fewer transportation options and longer and less reliable transit travel times may potentially result in increased road congestion and less transit usage due to fewer alternatives to driving and slower buses from more congestion. This may deter residents and businesses from locating in the corridor, indirectly reducing the pace of development as well as the overall level of investment in the study area. In addition, the development that would occur in the corridor under the No Build Alternative could be more dispersed and of lower density than with the Project. The No Build Alternative would likely result in a different pattern of economic development and property redevelopment than with the Project, especially within the proposed Project station areas, because there would be no light rail station to attract or accelerate additional development. New development associated with the No Build Alternative would entail "new money" that would generate employment and include within the Project corridor; these economic effects generally fall within the 2040 employment forecasts for the No Build Alternative. Indirectly, less intense development patterns in the proposed station areas could lead to a reduction in property tax revenue for affected jurisdictions.
- **Neighborhood and Community.** The No Build Alternative would not result in direct changes to neighborhoods and communities in the study area, because light rail would not be extended into them. Under the No Build Alternative, neighborhoods and communities would likely develop according to adopted plans, dependent upon economic conditions within the corridor, region, and state. However, the shape of that development in the proposed light rail station areas would be different than under the Project, with a tendency to be less intense and more dispersed. Transportation projects and private and public development projects could lead to the acquisition of property from existing owners and/or the displacement of existing occupants throughout the study area. Residents of the study area neighborhoods and those who travel in or through the study area would not receive a faster and more reliable mode of transportation or increased transit accessibility. Additional congestion that would occur in the corridor

⁴ The study areas referenced in this summary are defined in the environmental categories' respective *Regulatory Context and Methodology* sections.

by 2040 could affect cohesiveness of some neighborhoods and could have adverse air quality and noise impacts on some neighborhoods and communities within the study area. Changes from existing conditions to conditions under the No Build Alternative in 2040 are assessed under recreation facilities, visual quality, and noise/vibration.

- **Acquisitions and Displacements.** The No Build Alternative would have no property impacts associated with implementation of the Project. Transportation projects and private and public development projects could lead to the acquisition of property from existing owners and/or the displacement of existing occupants throughout the study area, depending on factors such as available right-of-way or vacant property; existing residential, commercial, and institutional development; and the geographic scope of the project. Public transportation and development projects would be required to comply with applicable state and federal acquisition regulations, such as the Uniform Relocation and Real Property Acquisitions Policies Act of 1970, as amended, (42 United States Code [U.S.C.] 4601 et seq.).
- **Cultural Resources.** The No Build Alternative would not adversely affect any historic properties, because the Project would not be constructed. In particular, the adverse effects to historic properties described in Section 3.5 would be avoided. Other transportation and development projects that would be developed under the No Build Alternative would have the potential to affect historic and other cultural resources. However, those projects would be required to comply with applicable related state and federal regulations, which would likely avoid, minimize, or mitigate impacts to cultural resources.
- **Parks, Recreation Areas, and Open Spaces.** The No Build Alternative would not directly or indirectly affect any park, recreation area, or open space in the study area, because the Project would not be implemented. In particular, adverse impacts to parks, recreation areas, and open spaces identified in Section 3.6 and uses of parks and recreation area properties identified in Chapter 6 would be avoided. Under the No Build Alternative, parks in the corridor that would be located within the Project's proposed station areas would not benefit from the improved transit access (e.g., reduced travel time, improved reliability) that would be provided by the Project.
- **Visual Quality and Aesthetics.** The No Build Alternative would not directly or indirectly affect the visual quality of the study area, because the Project would not be implemented. That is, the visual impacts identified in Section 3.7 associated with light rail and related improvements and removal or replacement of existing vegetation would be avoided. Visual and aesthetic conditions under the No Build Alternative would reflect changes to the landscape in the study area that would generally be limited to improvements of existing highway and transit facilities and public and private development projects. As individual properties develop or redevelop and as transportation projects are implemented over time, changes to the visual environment in the study area would occur incrementally. Transportation and development projects that would include structures (e.g., bridges) and multistory buildings would tend to have the greatest effect on their visual setting, depending in part on whether or not the existing visual setting already includes those types of improvements. Local land use regulations (e.g., zoning limits on building height, design review requirements) will also affect how much of an effect future development will have on the visual setting within the study area.
- **Geology and Groundwater Resources.** Under the No Build Alternative, the Project would not be constructed. The existing geology and soils environment would generally remain unchanged under the No Build Alternative, except for localized changes due to transportation and development projects. Those projects would be required to comply with applicable related state and local regulations, such as those regulating groundwater pumping.
- **Surface Water Resources.** Under the No Build Alternative, Project improvements would not be extended into the corridor and the potential impacts on surface water resources identified for the Project in Section 3.9, such as the displacement of some wetlands, would be avoided. As a result, there would be no direct water resource impacts associated with No Build Alternative. However, the water quality benefits from stormwater treatment associated with the proposed project would not be realized. Other transportation and development projects in the corridor would be developed under the No Build Alternative, and they would be required comply with applicable related federal, state, and local regulations. As those projects

are developed and implemented they would tend to result in water quality benefits from stormwater treatment associated with the proposed projects.

- **Ecosystems.** Under the No Build Alternative, the Project would not be constructed and existing streams, vegetation, and wildlife habitat would not be directly or indirectly affected. The potential environmental benefits of the Project would also not be realized under the No Build Alternative, including implementation of proposed mitigation for streams, vegetation, habitat, and regulatory buffers, which could improve the existing conditions of some of these resources. Other transportation and development projects that would occur within the project area under the No Build Alternative could adversely affect ecosystems, depending on the scope and geographic location of the project relative to existing streams, vegetation, and wildlife habitat. Those projects would be required to be implemented consistent with applicable federal, state, and local regulations affecting ecosystems.
- **Air Quality and Greenhouse Gases.** Table 3.11-2 summarizes the existing air quality monitoring data for Hennepin County in 2011, 2012, and 2013. Under the No Build Alternative, regional vehicle miles traveled (VMT) in 2040 is expected to increase compared to existing conditions; however, Mobile Source Air Toxic (MSAT) emissions are expected to decrease due to the effectiveness of the U.S. Environmental Protection Agency's (EPA's) national air quality control programs. Under the No Build Alternative, annual greenhouse gases in 2040 are projected to decline to approximately 15,105,602 metric tons, from approximately 16,062,918 metric tons in 2013 and compared to approximately 15,107,680 metric tons under the Project.
- **Noise and Vibration.** With the No Build Alternative, there would be no light rail operations within the corridor, and therefore there would be no light rail-related noise or vibration within the corridor. With the No Build Alternative, noise levels in the corridor would continue to be dominated by other transportation-related noise sources, including cars, trucks, freight trains, and aircraft from the Minneapolis–St. Paul International Airport. Other noise sources would include miscellaneous industrial activities, commercial activities, and local construction projects. With projected population and employment growth within the corridor and region, it would be expected that noise levels from those sources under the No Build Alternative would tend to increase compared to existing conditions.
- **Hazardous and Contaminated Materials.** Under the No Build Alternative, there would be no Project-related removal or cleanup of potentially hazardous materials in the study area, including contaminated soil or groundwater, and the potential uncontrolled migration of existing contaminants would likely continue. However, there would tend to be removal or cleanup of potentially hazardous materials in the study area due to the implementation of other transportation and development projects, depending on their locations and the applicable related regulations at the time they are implemented. Depending on the type of development and redevelopment that occurs—and upon the type of existing development that is displaced by redevelopment—development and redevelopment projects could either reduce or increase the risk of future hazardous material contamination in the study area.
- **Electromagnetic Fields, Electromagnetic Interference (EMF/EMI), and Utilities.** Under the No Build Alternative, the Project would not be constructed and there would be neither impacts from EMF and the resulting EMI nor impacts to utilities from the Project. Other transportation projects, except for the proposed METRO Blue Line Extension, would not include new electrical-powered modes that could have the potential to affect EMF/EMI-sensitive land uses. Most transportation and development projects would affect utilities due to ground disturbances required to implement physical improvements, such as new roadways or buildings, but those projects would be implemented under applicable local regulations and in coordination with affected utility owners.
- **Energy.** The total long-term regional energy consumption for the No Build Alternative in 2040 would be approximately 232.51 trillion British thermal units (Btu) annually. The No Build Alternative would have a slightly higher forecast annual regional energy consumption (109 billion Btu more per year) than the Project. This higher consumption under the No Build Alternative is expected because no mode shifts from single-occupant vehicles to transit would occur as they would with the Project. Energy use required to construct the Project would be avoided under the No Build Alternative.

TABLE 3.0-1

Impacts and Mitigations by Environmental Category^a

Environmental Category		Summary of Impacts and Mitigations
3.1 Land Use	Long-term Direct Impacts	<ul style="list-style-type: none"> • Direct conversion of approximately 144 acres of privately owned industrial, commercial, and residential land, publicly and privately owned parks and open space, publicly owned rights-of-way (i.e., HCRRA), and privately owned railroad rights-of-way (i.e., Canadian Pacific Railway and BNSF Railway) to public transportation-related use (refer to Table 3.1-5 for more information) • No adverse impacts due to no changes in overall land use characteristics within the vicinity of the Project
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Potential increased intensity and/or advanced timing of development surrounding proposed light rail station areas • No adverse impacts
	Short-term Impacts	<ul style="list-style-type: none"> • Temporary changes to property access during construction or temporary conversion of land to a transportation use for construction staging and other construction activities • Temporary easements on 134 acres effecting 178 parcels of land that include industrial, commercial, railroad, residential, and public land uses
	Commitments	None
	Mitigation Measures	<p>Short-term:</p> <ul style="list-style-type: none"> • Develop and implement a Construction Mitigation Plan and a Construction Communication Plan that will address short-term impacts to land use related to temporary construction easements and other construction activities; strategies may include: <ul style="list-style-type: none"> – Issue construction updates and post them on the Project website – Provide advance notice of roadway closures, driveway closures and utility shutoffs – Conduct public meetings – Establish a 24-hour construction hotline – Prepare materials with information about construction – Address property access issues – Assign staff to serve as liaisons between the public and contractors during construction • Develop and implement a construction staging plan, which will be reviewed with the appropriate jurisdictions and railroads. Components of the staging plan include traffic management plans and a construction timeline.
3.2 Economic Activity	Long-term Direct Impacts	<p>Employment:</p> <ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – \$34.5 million (2015 dollars) in local annual wages and salaries, resulting in 172 long-term jobs in the local economy • No adverse impacts to regional employment due to the projected increase in transit workers <p>Property Tax Revenue:</p> <ul style="list-style-type: none"> • Permanent removal of acquired private parcels from the property tax base of affected cities and corresponding reduction in property tax revenue from those parcels <p>Existing Business and Development/Redevelopment:</p> <ul style="list-style-type: none"> • Changes in local traffic patterns and the number of available off-street and on-street parking spots, resulting in a loss of overall parking for some businesses and a related loss in revenue • Removal of land acquired by the Project from the inventory of available land for potential development/redevelopment <p>Freight Rail Owners and Operators:</p> <ul style="list-style-type: none"> • No adverse impacts to freight rail owners and operators based on modifications by the Project

Environmental Category		Summary of Impacts and Mitigations
	Long-term Indirect Impacts	<p>Employment:</p> <ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – Potential creation of new jobs as employees gain easier access to businesses, residential housing units, and other facilities, providing a net benefit to the local economy • No adverse impacts due to new jobs created in the region as employees gain easier access to businesses <p>Property Tax Revenue:</p> <ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – Potential increase in property tax revenue for local jurisdictions related to increases in development/redevelopment • No adverse impacts to property tax revenue due to the transit oriented development potential surrounding the stations <p>Existing Business and Development/Redevelopment:</p> <ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – Likely increased property values in areas surrounding proposed light rail stations – Likely increase in development/redevelopment in the areas surrounding light rail stations • Potential impacts that could reduce value of an area (“nuisance effects”) • No adverse effects to existing business and development/redevelopment due to improved accessibility which expand workforce and retail access
	Short-term Impacts	<p>Employment:</p> <ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – Construction spending associated with the Project will result in an estimated \$1.3 billion in overall economic activity (year-of-expenditure dollars) over the construction period • Potential lost revenues for businesses due to temporary reduction of parking stalls, traffic congestion, reduced access, and increased noise, dust, and perceived changes in visual quality <p>Property Tax Revenue:</p> <ul style="list-style-type: none"> • No adverse impacts because the temporary occupancies and easements are not expected to result in displacement of businesses or residents <p>Existing Businesses:</p> <ul style="list-style-type: none"> • Potential increases in noise levels, dust, traffic congestion, visual changes, and increased difficulty accessing property for existing businesses <p>Freight Rail Owners and Operators:</p> <ul style="list-style-type: none"> • Slower freight rail operations during construction may occur and short periods of freight stoppage required to make some modifications to the freight rail track
	Commitments	<p>Long-Term:</p> <ul style="list-style-type: none"> • Pursue with the City of St. Louis Park the joint development opportunity at the proposed Beltline Station that could increase property tax revenues • Coordinate changes to freight rail tracks, sidings, or other facilities with the freight railroad owner and operator • Onsite flaggers to manage freight rail traffic during construction
	Mitigation Measures	<p>Long-Term:</p> <p>Existing Businesses and Development/Redevelopment Effects</p> <ul style="list-style-type: none"> • When acquiring property from a property owner, pay damages if the value of the property is decreased in accordance with the Uniform Act <p>Short-term:</p> <p>Existing Businesses and Development/Redevelopment Effects</p> <ul style="list-style-type: none"> • Develop and implement a Construction Mitigation Plan, Construction Communication Plan and construction staging plan (see 3.1)

Environmental Category		Summary of Impacts and Mitigations
		<p>Freight Rail Owners and Operators:</p> <ul style="list-style-type: none"> • Develop and implement freight rail operation coordination plans to mitigate short-term impacts to freight rail operations related to construction activities • Work with affected freight rail owners and operators to provide provisions in the construction contract to identify how the contractor will interact with the railroads • Work with affected freight rail owners and operators to sequence construction to minimize effects on freight movements and to identify optimal periods for closing the rail service and reducing speeds • Determine dates and times for all stoppages through coordination with the railroad owners and operators
3.3 Neighborhood and Community	Long-term Direct Impacts	<p>Access to Community Facilities:</p> <ul style="list-style-type: none"> • Some roadway modifications within the general vicinity of community facilities, but access to these facilities will be maintained and the Project will provide improve transit access to these facilities • No adverse impacts <p>Community Character:</p> <ul style="list-style-type: none"> • Some changes in noise/vibration and visual character adjacent to the Project and some property acquisition, but these changes will be confined to limited areas • No adverse impacts <p>Community Cohesion:</p> <ul style="list-style-type: none"> • Some changes in the local roadway, pedestrian, and bicycle networks will occur, but existing roadway and sidewalk/trail connectivity and access will be maintained or improved • No adverse impacts
	Long-Term Indirect Impacts	<ul style="list-style-type: none"> • Potential property conversion surrounding proposed station areas, including private and public development and/or redevelopment that could affect supply of and demand for off-street and on-street parking around station areas • No adverse impacts on community facilities, community character, or community cohesion
	Short-Term Impacts	<p>Access to Community Facilities:</p> <ul style="list-style-type: none"> • Temporary changes to roadways, including intersections modifications, and trail and sidewalk detours for routes which provide access to community facilities <p>Community Character:</p> <ul style="list-style-type: none"> • Construction impacts, such as increased levels of noise, vibration, and dust, may temporarily affect neighborhood character at times of heavy construction • Presence of large construction equipment may be perceived as visually disruptive <p>Community Cohesion</p> <ul style="list-style-type: none"> • Potential increases in noise levels, dust, and traffic congestion, including increased automobile and truck traffic through residential neighborhoods
	Commitments	None
	Mitigation Measures	<p>Short-term:</p> <ul style="list-style-type: none"> • Develop and implement the Construction Mitigation Plan, Construction Communication Plan and construction staging plan (see 3.1)
3.4 Acquisitions and Displacements	Long-term Direct Impacts	<ul style="list-style-type: none"> • Partial acquisition of 159 parcels (totaling 133.5 acres) and full acquisition of 36 parcels (totaling 64 acres) • Relocation of up to 72 businesses that currently operate on or use 20 of the parcels to be acquired
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Potential for increased development and redevelopment in areas surrounding station areas that could indirectly lead to acquisitions and displacements
	Short-term Impacts	<ul style="list-style-type: none"> • Temporary easements on 134 acres effecting 178 parcels of land that include industrial, commercial, railroad, residential, and public land uses

Environmental Category		Summary of Impacts and Mitigations
	Commitments	None
	Mitigation Measures	<p>Long-term and Short-term:</p> <ul style="list-style-type: none"> • Compensate businesses or persons displaced from a property in accordance with provisions of the Uniform Act and MN Stat. 117. Provide relocation benefits under the provisions of the Uniform Act and Mn Stat. 117.
3.5 Cultural Resources	Adverse Effects	<ul style="list-style-type: none"> • Adverse effect on the Kenilworth Lagoon and the Grand Rounds Historic District, of which the Kenilworth Lagoon is a contributing element • Adverse effect on the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot (Avoided with measures incorporated into the Project's design and Section 106 MOA) • Adverse effect at two archaeological sites, 21HE0436 and 21HE0437, both of which will be destroyed during the construction of the Project (the term "destroyed" is used in applying 36 CFR 800.5 and the Secretary of the Interior's Standards [36 CFR 68])
	Commitments	<ul style="list-style-type: none"> • Explored alternative locations for Project elements where adverse effects occur to archaeological resources • Implement Section 106 Memorandum of Agreement measures to avoid/minimize adverse effects
	Mitigation Measures	<ul style="list-style-type: none"> • Implement a Section 106 MOA that will include the following mitigation measures: <ul style="list-style-type: none"> – Architecture/History Properties <ul style="list-style-type: none"> ○ Install a parapet wall and rail damper on LRT bridge over waterway to mitigate the moderate noise impact at the Kenilworth Lagoon (see Section 3.12) ○ Rehabilitate/Reconstruct Works Progress Administration Rustic Style Retaining Walls to minimize and mitigate the direct physical and indirect visual adverse effects on the Grand Rounds Historic District, including the Kenilworth Lagoon ○ Design Project elements within and adjacent to the Grand Rounds Historic District in accordance with the <i>SOI's Standards (36 CFR 68)</i>, to be reviewed by the MnHPO and consulting parties, to further minimize the direct physical and indirect visual adverse effects ○ Develop a Construction Protection Plan detailing measures to be implemented during Project construction to avoid direct physical and indirect adverse effects ○ Prepare guidance for future preservation activities within the portion of the Grand Rounds Historic District: Canal System, including adjacent parkland, extending from the north end of Lake Calhoun to the east end of Cedar Lake, and including the entirety of the Lake of the Isles Park and Kenilworth Lagoon elements to mitigate the direct physical and indirect visual adverse effects to the Grand Rounds Historic District ○ Revised the Project design to relocate the crossover location near the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot 3,420 feet west along the alignment to allow the noise wall to shift at least 240 feet west, and avoid adverse visual effect ○ Revised the Project design to relocate the signal bungalow near the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot to the alternate crossover location to further avoid adverse visual effects (complete) – Archaeological Resources <ul style="list-style-type: none"> ○ Conduct a Phase III Archaeological Data Recovery of Sites 21HE0436 and 21HE0437 ○ Incorporate into the design of the Royalston Station interpretation of the sites, based on the results of the Phase II investigations and allowing for the incorporation of any additional information from the Phase III data recovery ○ Develop an interpretative plan for the interpretation in conformance with the Standards and Practices for Interpretive Planning from the National Association for Interpretation and Creating Outdoor Trail Signage technical leaflets
3.6 Parks and Recreation	Long-term Direct Impacts	<p>The following parks, recreation areas, and open space properties will incur long-term direct impacts as a result of the Project:</p> <ul style="list-style-type: none"> • Unnamed Open Space A: Acquisition of entire 2.95-acre open space parcel to accommodate installation of LRT tracks and station platform; trail realignment • Unnamed Open Space B: Acquisition of 2.5 acres to accommodate installation of LRT tracks; trail realignment • Kenilworth Channel/Lagoon: LRT improvements and modifications to the freight rail and trail alignments will occur on approximately 0.3 acre • Cedar Lake Park: New segment of sidewalk to be constructed within the park near East Cedar Beach; realignment of a portion of North Cedar Lake Regional Trail in park

Environmental Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> Bryn Mawr Meadows Park: Acquisition of 0.4-acre permanent maintenance easement to accommodate replacement trail bridge; modification of trail alignments in the park
	Long-term Indirect Impacts	<p>The following parks, recreation areas, and open spaces will incur long-term indirect impacts as a result of the Project:</p> <ul style="list-style-type: none"> Purgatory Creek Park: Changes to visual setting due to installation of elevated LRT line adjacent to park Nine Mile Creek Conservation Area: Changes to visual setting due to installation of LRT line adjacent to the property Overpass Skate Park: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Edgebrook Park: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Minnehaha Creek Open Space: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Jorvig Park: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Lilac Park: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Park Siding Park: Changes to visual setting and noise conditions due to installation of LRT line adjacent to park Kenilworth Channel/Lagoon: Changes to visual setting and noise conditions due to installation of LRT line across the channel Bryn Mawr Meadows Park: Modification to the park's visual setting due to the replacement trail bridge; improved transit and trail access
	Short-term Impacts	<p>The following parks, recreation areas, and open spaces will incur short-term impacts as a result of the Project:</p> <ul style="list-style-type: none"> Purgatory Creek Park: Acquisition of temporary construction easement; temporary changes to access, noise, and visual setting conditions during construction Nine Mile Creek Conservation Area: Temporary changes to visual setting and noise conditions during construction; potential for construction activities within the parcel Overpass Skate Park: Temporary changes to visual setting and noise conditions during construction Minnehaha Creek Open Space: Temporary changes to visual setting and noise conditions during construction Edgebrook Park: Temporary changes to visual setting and noise conditions during construction Jorvig Park: Temporary changes to visual setting and noise conditions during construction Lilac Park: Temporary changes to visual setting and noise conditions during construction Park Siding Park: Temporary changes to visual setting and noise conditions during construction Kenilworth Channel/Lagoon: Temporary closure of channel/user detour during construction; temporary changes to access, visual setting and noise conditions during construction Cedar Lake Park: Acquisition of temporary construction easement to accommodate trail reconstruction within the park Bryn Mawr Meadows Park: Acquisition of temporary construction easement and temporary Project activities within the park related to construction of replacement bridge and realignment of trails
	Commitments	<p>Long-term:</p> <ul style="list-style-type: none"> Kenilworth Channel/Lagoon: Conclude consultation on the design of the proposed bridges prior to construction Bryn Mawr Meadows Park: <ul style="list-style-type: none"> Continue consultation with MPRB to determine realignment of trails within the park prior to construction Conclude consultation with the MPRB on the design of the proposed new bridge prior to construction <p>Short-term:</p> <ul style="list-style-type: none"> Kenilworth Channel/Lagoon: Develop BMPs to be implemented during removal of the existing bridges and construction of the new bridges Bryn Mawr Meadows Park: Maintain connectivity with temporary trails during construction
	Mitigation Measures	<p>Long-term:</p> <ul style="list-style-type: none"> When permanently acquiring property at Bryn Mawr Meadows Park and two open spaces in Minnetonka, provide property owners with compensation in accordance with the Uniform Act <p>Short-term:</p>

Environmental Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> When acquiring property for temporary construction purposes (i.e., temporary easement) at Purgatory Creek Park, Cedar Lake Park, and Bryn Mawr Meadows Park, provide property owners with compensation in accordance with the Uniform Act. Continue efforts to avoid, minimize, and mitigate impacts to Purgatory Creek Park, Nine Mile Creek Conservation Area, two unnamed open spaces in Minnetonka, Overpass Skate Park, Minnehaha Creek Open Space, Edgebrook Park, Jorvig Park, Park Siding Park, Kenilworth Channel/Lagoon, and Bryn Mawr Meadows Park; and develop a Construction Communication Plan that includes coordination with park owners, advance notice of construction activities, and highlight road, sidewalk, and trail closures, and detour routes Restore areas and features of parks and recreation areas altered or disturbed due to construction activities to original conditions or better in coordination with the jurisdictional owner
3.7 Visual Quality and Aesthetics	Long-term Direct Impacts	<ul style="list-style-type: none"> Six views with a substantial level of visual quality impact, six views with a moderate level of visual quality impact^b
	Long-term Indirect Impacts	<ul style="list-style-type: none"> Potential for the built environment to appear more intensively developed and more urbanized in character due to the potential opportunities for new development, including higher residential densities and, in some cases, new or expanded commercial activities
	Short-term Impacts	<ul style="list-style-type: none"> Temporary impacts in portions of all visual analysis units^b associated with: construction staging areas; concrete and form installation; lights and glare from construction areas; and dust and debris
	Commitments	<ul style="list-style-type: none"> Designed stations to have a minimal impact on the surrounding environs. Each of the stations has been designed to be compatible or attractive additions to the surrounding community. Screen or landscape power stations located in areas of moderate or high visual sensitivity, to be compatible with the surrounding neighborhood character
	Mitigation Measures	<p>Long-term:</p> <ul style="list-style-type: none"> Follow design guidelines for key structures throughout the proposed light rail alignment found in the Council's <i>Visual Quality Guidelines for Key Structures</i> Follow exceptions to design guidelines where context sensitive designs have and will be prepared including the proposed light rail structures over Highway 212, I-394, and Highway 100, as well as individual retaining wall and bridge designs at 5th Avenue South and 7th Avenue South, in Hopkins Design and implement landscaping into design at appropriate locations to address identified visual impacts, within available landscape budget and balancing other priorities for landscaping (e.g., surface water quality, habitat preservation, species of concern), which could include the following: <ul style="list-style-type: none"> Retain as much existing vegetation as appropriate to provide shielding for sensitive viewpoints, including techniques such as chaining and mowing without removal of the root systems, and/or tying back large shrubs and trees to provide adequate areas for construction activities Restore and replant cleared areas in a timely manner, where appropriate, considering such factors as species type, seasonal growing conditions, and other construction-related activities Place new and replacement trees based on such factors such as helping to provide the maximum screening of views to and from sensitive viewpoints (e.g., adjacent residential areas) or providing street ornamentation, where appropriate Develop landscape plans for areas adjacent to elevated structures, retaining walls, noise walls, and TPSS sites^c to achieve such effects as providing partial screening from sensitive viewpoints Incorporate visual mitigation measures for Section 106-protected resources and Section 4(f)-protected properties as specified in Section 106 Memorandum of Agreement and Final Section 4(f) Evaluation, respectively <p>Short-term:</p> <ul style="list-style-type: none"> Follow the Council's design guidelines, to address construction impacts where appropriate and practical; these include: <ul style="list-style-type: none"> Locate staging areas in places where their visibility will be minimal and, to the extent required, provide temporary visual screening to limit views into them from nearby residential areas, trails, streets, or other places from which they will be seen by visually sensitive viewers Use construction methods that minimize the need to remove vegetation to accommodate construction activities

Environmental Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> Minimize and shielding lighting needed for staging areas or for nighttime construction activities Restore areas disturbed during construction
3.8 Geology and Groundwater	Long-term Direct Impacts	<p>Geology:</p> <ul style="list-style-type: none"> Potential for uneven ground settlement and bearing failure of the building foundations for the light rail alignment, stations, structures, and surface parking lots/parking structures Cuts and fills to accommodate appropriate light rail track grade, including two light rail tunnels No adverse impacts <p>Groundwater:</p> <ul style="list-style-type: none"> Water collected at the tunnel portals will be routed through a pretreatment system that captures debris and sediments and through an underground infiltration chamber Water from internal tunnel will be treated, if required, and pumped to the adjacent sanitary sewer systems owned by either the City of Minneapolis or Metropolitan Council Environmental Services
	Long-term Indirect Impacts	<p>Geology:</p> <ul style="list-style-type: none"> No adverse impacts due to the existing disturbed soils underlying these areas <p>Groundwater:</p> <ul style="list-style-type: none"> Impacts may occur as development activities in the Project's vicinity increase, but those development activities will be held to applicable regulatory standards and requirements
	Short-term Impacts	<p>Geology:</p> <ul style="list-style-type: none"> At- or above-grade construction activities will expose sub-soil when topsoil is removed, which will be susceptible to surface-water and wind erosion <p>Groundwater:</p> <ul style="list-style-type: none"> Temporary groundwater pumping during construction Potential for groundwater contamination Potential that buildings, roadways, and utilities may settle Potential that pumped groundwater will be discharged to sewer and not recharge shallow aquifer
	Commitments	<p>Long-term/Geology:</p> <ul style="list-style-type: none"> Address areas of compressible soils with appropriate design and construction techniques to avoid the potential for settlement and bearing failure of building foundations No soils will be placed in floodplains or wetlands unless permitted <p>Short-term/Geology:</p> <ul style="list-style-type: none"> Develop a stormwater pollution prevention plan as a part of the permitting process Use wildlife-friendly BMPs to avoid the potential effects of soil erosion when topsoil is removed <p>Long-term/Groundwater:</p> <ul style="list-style-type: none"> Tunnels designed to minimize inflow of groundwater through various design features and BMPs <p>Short-Term/Groundwater:</p> <ul style="list-style-type: none"> Adhere to permit requirements related to groundwater pumping and discharge from pumping Employ proper BMPs associated with groundwater removal during construction, to minimize the risk of building settlement Within Minneapolis, send groundwater discharged to the sanitary sewer system to the treatment plant on the Mississippi River
	Mitigation Measures	<p>Long-term/Groundwater:</p> <ul style="list-style-type: none"> Prepare a groundwater management plan, to be approved by MnDNR and applicable local jurisdictions before construction, which will address collection, storage, and disposal of surface water runoff and pumped groundwater following construction of the Project, and consider concerns about placement of stormwater handling facilities in or near wellhead protection areas

Environmental Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> • Include in the groundwater management plan, particularly within the Kenilworth Corridor, monitoring, which will be used to assess excessive groundwater infiltration and to prioritize any potential repairs to the waterproofing systems <p>Short-term/Groundwater:</p> <ul style="list-style-type: none"> • Develop and implement a monitoring plan that provides means for detecting the settlement of buildings, roads, or parking areas, so that additional remediation methods could be employed, if necessary • Prepare a groundwater management plan, to be approved by MnDNR and applicable local jurisdictions before construction, which will include required groundwater monitoring and management practices during construction • Seal and abandon all water or monitor wells or boreholes installed as part of soil and groundwater investigation; contractor will notify the Minnesota Department of Health if previously unidentified well are encountered during construction and also retain a licensed well contractor to abandon the well, if necessary
3.9 Surface Water Resources	Long-term Direct Impacts	<p>Wetlands^d:</p> <ul style="list-style-type: none"> • Impacts^e on 20 wetlands regulated under the Minnesota Wetlands Conservation Act (4.70 acres) and/or Clean Water Act (1.83 acres) • Impact to 20 linear feet of Kenilworth Channel <p>Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Impacts will result from conversion of undeveloped land and operations and maintenance of the Project • 39.9 acres of new impervious surface • Five new crossings over water bodies • Fill into ditch at Hopkins Operations and Maintenance Facility <p>Floodplains:</p> <ul style="list-style-type: none"> • Long-term fill within 15 locally regulated floodplains (7,296 cubic yards)
	Long-term Indirect Impacts	<p>Wetlands^d:</p> <ul style="list-style-type: none"> • Impacts to wetlands may occur if new development occurs within the proposed station areas <p>Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Impacts will occur as commercial, transportation, and industrial activities in the Project's vicinity increase new point and non-point sources of water pollutants <p>Floodplains:</p> <ul style="list-style-type: none"> • Impacts to floodplains may occur if new development occurs within the proposed station areas
	Short-Term Impacts	<p>Wetlands^d:</p> <ul style="list-style-type: none"> • Impacts^f to 18 wetlands regulated under the Minnesota Wetland Conservation Act (3.83 acres) and/or the Clean Water Act (7.53 acres) • Impact to 60 linear feet of North Fork of Nine Mile Creek • Impact to 100 linear feet of Kenilworth Channel <p>Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Increased rates and volumes of sediment-laden runoff during excavation, accidental spills and leaks from construction vehicles and equipment, and removal of riparian vegetation • Sediment and erosion impacts to public waters and surface water quality will occur near stream crossings, where slopes are greater and construction activities occur closer to the public water, and where controls are more difficult to implement and maintain <p>Floodplains:</p> <ul style="list-style-type: none"> • Temporary fill within floodplains • Loss or disturbance of soils and vegetation at some locations, which will increase the likelihood of temporary erosion and sedimentation in floodplains

Environmental Category		Summary of Impacts and Mitigations
	Commitments	<p>Long-term/Wetlands:</p> <ul style="list-style-type: none"> • Strive to avoid impacts on wetlands through design solutions <p>Short-term/Wetlands:</p> <ul style="list-style-type: none"> • Avoided and minimized short-term impacts to wetlands through design adjustments • Avoid in-stream construction when possible; install temporary portable dams or cofferdams as required • Implement appropriate wildlife-friendly (e.g. natural materials, no welded webbing) construction BMPs <p>Long-term/Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Implement various design features that meet stormwater regulatory requirements including minimizing or eliminating pollutant sources and implementing structural and non-structural BMPs to treat and control runoff <p>Short-term Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Develop a stormwater pollution prevention plan that complies with the Construction General Permit • Long-term and Short-term/Floodplains: • Develop appropriate plans and obtain applicable permits for floodplains, as well as implement BMPs
	Mitigation Measures	<p>Long-term/Wetlands:</p> <ul style="list-style-type: none"> • Purchase the required amount of wetland mitigation bank credits based on the long-term impacts and associated replacement ratios identified in the WCA and CWA Section 404 permit applications <p>Short-term/Wetlands:</p> <ul style="list-style-type: none"> • Restore wetlands temporarily affected during construction to existing grade, hydrology, and reseed with appropriate native wetland species seed mix, as required by the WCA and CWA; purchase wetland mitigation bank credits for CWA regulated short-term impacts lasting longer than 180 days <p>Long-term/Public Waters and Surface Water Quality:</p> <ul style="list-style-type: none"> • Design stormwater management facilities, which will be approved by local jurisdictions and through final permitting, to provide stormwater treatment in compliance with NPDES requirements • Short-term/Public Waters and Surface Water Quality: • Design stormwater management facilities to provide stormwater treatment in compliance with NPDES requirements <p>Long-term/Floodplains:</p> <ul style="list-style-type: none"> • Implement appropriate compensatory storage within or adjacent to the affected waterbody and where it is not feasible to meet this requirement, request a variance from applicable regulatory agency • Short-term/Floodplains: • Remove short-term floodplain fill placed during construction and restore elevations to pre-existing conditions resulting in a no net-loss of flood storage volume
3.10 Ecosystems	Long-Term Direct Impacts	<p>Threatened and Endangered Species:</p> <ul style="list-style-type: none"> • “No effect” on the Higgins eye (pearly mussel) and Snuffbox mussel, or their associated critical habitats • The Project may affect but is not likely to adversely affect the northern long-eared bat • No element occurrences of the Blanding’s turtle within 0.9 mile of the Project’s alignment; however, MnDNR determined this species may be adversely affected by the Project <p>Habitat:</p> <ul style="list-style-type: none"> • Removal, conversion, degradation, or splitting of existing habitat • Loss and/or degradation of vegetated areas associated with five land cover types, which could result in a decrease in potential wildlife foraging areas, breeding habitats, and nesting areas • Loss of approximately 60 acres of habitat <p>Migratory Birds:</p>

Environmental Category	Summary of Impacts and Mitigations
Long-Term Indirect Impacts	<ul style="list-style-type: none"> No adverse impacts as it is likely that regulated migratory bird species have adapted to survive in urban areas and tolerate high levels of human activity given the limited forest or woodland areas present
	<p>Threatened and Endangered Species:</p> <ul style="list-style-type: none"> Impacts to threatened and endangered species may occur if new development occurs within the proposed station areas <p>Habitat:</p> <ul style="list-style-type: none"> Increased disturbance of habitat because of activities associated with the daily operation of the light rail (e.g., noise, lighting, dust), as well as an increase in human activity in or adjacent to habitat areas Impacts to habitat may occur if new development occurs within the proposed station areas <p>Migratory Birds:</p> <ul style="list-style-type: none"> No adverse impacts as it is likely that regulated migratory bird species have adapted to survive in urban areas and tolerate high levels of human activity given the limited forest or woodland areas present
	<p>Threatened and Endangered Species:</p> <ul style="list-style-type: none"> No adverse impacts on federal or state listed threatened or endangered species, or critical habitat because impacts are avoided through commitments <p>Habitat:</p> <ul style="list-style-type: none"> Temporary loss of vegetated areas associated with five natural land cover types, which could result in short-term loss of habitat Temporary loss of approximately 23 acres of habitat <p>Migratory Birds:</p> <ul style="list-style-type: none"> No adverse impacts because the Project's light rail alignment will be located in a predominantly urban area, and the species of migratory birds that regularly travel throughout or nest within this region are likely familiar with and/or have adapted to dealing with construction activities similar to those associated with construction of the Project
Commitments	<p>Long-term/Threatened and Endangered Species:</p> <ul style="list-style-type: none"> Implement MnDNR recommendations to avoid direct impacts to the Blanding's turtle (for measures see Section 3.10.3.1) <p>Short-term/Threatened and Endangered Species:</p> <ul style="list-style-type: none"> Seasonal restriction on removal of trees during the summer northern long-eared bat pup season (June 1 to July 31) at the South Fork Nine Mile Creek No activities within ¼ mile of a known hibernacula Implement MnDNR recommendations to avoid impacts to Blanding's turtle as part of the Project's design <p>Long-term/Habitat:</p> <ul style="list-style-type: none"> Implemented measures identified during design adjustment process to avoid and minimize long-term fragmentation, degradation and/or loss of habitat <p>Short-term/Habitat:</p> <ul style="list-style-type: none"> Include invasive species and noxious weeds management plan in the Project's construction specifications Implement measures such as fencing to isolate areas of disturbance, minimize amount of trees and vegetation removed as part of and implement measures to protect aquatic habitat <p>Migratory Birds:</p> <ul style="list-style-type: none"> Avoid removing nest habitat during primary migratory bird nesting season (May 1 to Aug. 31), where appropriate Conduct field survey prior to removal of nest habitat during primary bird nesting season (May 1 to Aug. 31) and follow developed protocol should an active nest be encountered Comply with the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Statutes [Stat.] 250), which prohibits taking, possession, or commerce of these species

Environmental Category		Summary of Impacts and Mitigations
	Mitigation Measures	<p>Long-term/Habitat:</p> <ul style="list-style-type: none"> • Incorporate native landscaping into the Project's design, where applicable and appropriate <p>Short-term/Habitat:</p> <ul style="list-style-type: none"> • Reseed and restore habitat that is temporarily disturbed during construction, where appropriate, upon construction completion
3.11 Air Quality and Greenhouse Gases	Long-term Direct Impacts	<ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – Lower levels of mobile source air toxics emissions in the region, with projected reduction in vehicle travel when passengers switch from driving to light rail • No adverse impacts
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Beneficial effects: <ul style="list-style-type: none"> – Improved traffic conditions on the region's travel network will reduce vehicle emissions and contribute to air quality improvements – Net Greenhouse Gas emissions reduction in the region and beneficial GHG and climate change effects • No adverse impacts
	Short-term Impacts	<ul style="list-style-type: none"> • Temporary increase in air emissions from project construction • Temporary increase in greenhouse gases from the construction equipment and vehicles • Short-term increases in dust in and around the project area from construction activities
	Commitments	<p>Short-term/Greenhouse Gases:</p> <ul style="list-style-type: none"> • Implement BMPs, such as energy efficient construction equipment vehicles and limiting equipment and vehicle idling time during construction to reduce greenhouse gas emissions from construction activities <p>Short-term/Air:</p> <ul style="list-style-type: none"> • Comply with federal and state regulations, including the EPA's emission standards for on-road vehicles and off-road construction equipment, the state air rules in Chapter 7023: Mobile and Indirect Sources, and the applicable MnDOT's Standard Specifications for construction • Implement BMPs to minimize temporary construction emission impacts, including, but not limited to: <ul style="list-style-type: none"> – Minimization of land disturbance during site preparation – Watering of the construction site – Stabilization of dirt piles if they are not removed immediately – Use dust suppressants on unpaved areas – Covering trucks while hauling soil/debris off-site or transferring materials – Minimization of unnecessary vehicle and machinery idling – Use of energy efficient equipment and vehicles • Implement EPA-recommended measures where applicable (See Section 3.11.3.5 for a detailed list of measures)
	Mitigation Measures	None
3.12 Noise	Long-term Direct Impacts	<ul style="list-style-type: none"> • Without mitigation: 237 moderate noise impacts (52 buildings) and 558 severe noise impacts (69 buildings) for residential land uses; one moderate noise impact for institutional land uses • With mitigation: 59 moderate noise impacts (22 buildings) for residential land uses⁹
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Increased development near new light rail stations will likely result in more people having exposure to the noise produced by light rail vehicles and park-and-ride lots • Increase in transit ridership will likely reduce roadway traffic noise
	Short-term Impacts	<ul style="list-style-type: none"> • Elevated noise levels from construction equipment • For residential land use, at-grade track construction noise impacts can extend 120 feet from the construction site

Environmental Category	Summary of Impacts and Mitigations
	<ul style="list-style-type: none"> • If nighttime construction is conducted, noise impacts from at-grade construction can extend 380 feet from the construction site
	<p>Commitments</p> <p>Short-term:</p> <ul style="list-style-type: none"> • Require construction equipment used by contractors be properly muffled and in proper working order • Develop a nighttime construction mitigation plan if nighttime construction is deemed necessary • Conduct construction activities during daytime hours, except when required and allowable within local noise ordinance procedures
	<p>Mitigation Measures</p> <p>Long-term:</p> <ul style="list-style-type: none"> • Mitigate for severe and moderate impacts, where the existing noise levels exceed 65 dBA Ldn or where there is an increase in noise due to the Project of three dB or greater, where reasonable and feasible, in accordance with the noise mitigation guidelines contained in the Regional Transitway Guidelines (March 2016) • Employ BMPs to minimize noise project-wide, including use of wheel skirts (panels over the wheels) to reduce wheel/rail noise and continuously welded rail to eliminate gaps in the tracks that generate additional noise; conduct wheel truing to keep wheels smooth and round and rail grinding to remove corrugations; and apply lubrication if/where needed • Conduct wheel truing (to keep wheels smooth and round) and rail grinding (to remove corrugations) on a regular basis, and employ lubrication where appropriate and as needed • Locate noise generating elements (e.g., crossovers) away from sensitive locations, where possible • Implement the following mitigation measures for residential and institutional locations: <ul style="list-style-type: none"> - Provide sound insulation improvements at building nearest LRT track: Residence Inn, Eden Prairie - Construct 8' high noise barrier extending 1,800'; Claremont Apartments, Minnetonka - Implement design elements for quiet zones, where the routine sounding of horns would be eliminated because of safety improvements at at-grade crossings, including modifications to streets, raised median barriers, four quadrant gates, and other improvements designed and implemented by the Project and consistent with quiet zone readiness at the following locations: <ul style="list-style-type: none"> o Hopkins Plaza Apartments, Hopkins o 7th Avenue, Hopkins o Sonoma Apartment, Hopkins o 6th Avenue, Hopkins o Town Terrace Apartments, Hopkins o Westside Apartments, Hopkins o Creekwood Estates, Hopkins o Railroad Avenue, St. Louis Park o Village in the Park Condos, St. Louis Park o TowerLight, St. Louis Park o 35th Street Apartments, St. Louis Park o Construct 3' high parapet barrier extending 500' on elevated structure over Excelsior Boulevard, Hopkins o Construct 8' to 11' noise barrier extending 760', Railroad Avenue, Hopkins o Construct 2' high parapet wall and rail dampers 300', Kenilworth Channel, Minneapolis o Complete on-site testing to determine if residences meet interior noise level criteria: one residence at Burnham Road North located NW of the channel; three residences at Thomas Ave South • Implement wayside bell at Thomas Avenue South, Sheridan Avenue South, and South Upton Avenue, Minneapolis <p>Short-term:</p> <ul style="list-style-type: none"> • Contractors will prepare a detailed Noise Control Plan for the Project's construction duration. A noise control engineer or acoustician will work with the contractor to prepare a Noise Control Plan in conjunction with the contractor's specific equipment and methods of construction. Key elements of this plan will include: <ul style="list-style-type: none"> - Contractor's specific equipment types - Schedule and methods of construction - Maximum noise limits for each piece of equipment with certification testing

Environmental Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> Prohibitions on certain types of equipment and processes during the nighttime hours without local agency coordination and approved variances Identification of specific sensitive sites where near construction sites Methods for determining construction noise levels Implementation of noise control measures where appropriate Include a 24-hour construction hotline
3.13 Vibration	Long-term Direct Impacts	<p>Vibration:</p> <ul style="list-style-type: none"> No vibration impacts for residential or institutional land uses <p>Ground-borne noise:</p> <ul style="list-style-type: none"> Without mitigation: 54 units (five buildings) ground-borne noise impacts for residential land uses in the tunnel section south of the Kenilworth Channel, and one ground-borne noise impact at an institutional land use, an audiology clinic With mitigation: no vibration impacts to residential or institutional land uses
	Long-term Indirect Impacts	<ul style="list-style-type: none"> Increased development near new light rail stations will likely result in more people having exposure to vibrations produced by LRT and freight rail
	Short-term Impacts	<ul style="list-style-type: none"> Vibration will result from operation of heavy equipment (pile driving, vibratory hammers, hoe rams, vibratory compaction, and loaded trucks) needed to construct bridges, retaining walls, roads, and park-and-ride facilities
	Commitments	<p>Long-term:</p> <ul style="list-style-type: none"> Construct a tunnel slab within the Kenilworth Corridor to significantly reduce the number and magnitude of ground-borne noise impacts
	Mitigation Measures	<p>Long-term/Ground-borne noise:</p> <ul style="list-style-type: none"> Implement highly resilient rail fasteners in the tunnel section (2,200 feet) to eliminate ground-borne noise impacts (the fasteners should be designed to provide at least 5 dB of reduction in vibration levels at 80 Hz and higher) Replace the existing vibration isolation elements between the floor of the building and the sound booth at Hearing Care Specialists (audiologist) (the isolation elements should provide at least 10dB of reduction in vibration levels at 80Hz and higher) <p>Short-term/Vibration:</p> <ul style="list-style-type: none"> Apply the following measures where feasible to minimize impacts from construction vibration: <ul style="list-style-type: none"> Limit Construction Hours: Limit high-vibration activities at night Construction Specifications: Include limits on vibration in the construction specifications, especially at locations with high-vibration activities Alternative Construction Methods: Minimize the use of impact and vibratory equipment, where feasible and appropriate Truck Routes: Use truck haul routes that minimize exposure to sensitive receptors and minimize damage to surface roadways, where appropriate Pre-Construction Survey: Perform pre-construction surveys to document the existing conditions of structures in the vicinity of sites where high-vibration construction activities will be performed Vibration Monitoring: If a construction activity has the potential to exceed the damage criteria at a building, the contractor will be required to conduct vibration monitoring and, if the vibration exceeds the limit, the activity must be modified or terminated
3.14 Hazardous and Contaminated Materials	Long-term Direct Impacts	<ul style="list-style-type: none"> Beneficial Effect: <ul style="list-style-type: none"> Removal of existing hazardous and contaminated soils within the construction area for the Project No adverse impacts as operation of the light rail vehicles will not generate hazardous materials or regulated wastes and due to the effectiveness of identified avoidance measures (i.e., BMPs for OMF)
	Long-term Indirect Impacts	<ul style="list-style-type: none"> Beneficial Effect: <ul style="list-style-type: none"> Potential for known hazardous and contaminated material sites to be cleaned up as development/redevelopment occurs

Environmental Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> Long-term management of methane-related indirect impacts on the proposed Hopkins OMF site from the Hopkins Sanitary Landfill may be necessary to limit potential worker exposure to methane
	Short-term Impacts	<ul style="list-style-type: none"> Earthwork or other disturbance at or in proximity to contaminated areas could mobilize or result in the release of hazardous and contaminated materials Potential spills of hazardous materials during construction Discovery of previously undocumented contaminated soil or groundwater contamination encountered during construction Potential for structures on acquired land to contain contaminated or hazardous materials Potential exposure of hazardous material to people present within and adjacent to the project construction area
	Commitments	<p>Long-term:</p> <ul style="list-style-type: none"> Responsible management and containment of hazardous materials that will be used and stored onsite at the proposed Hopkins OMF Implement industry BMPs for the collection and disposal of oils, grease, and other waste materials generated during vehicle maintenance and repair activities at the Hopkins OMF Obtain a Generator License through Hennepin County for the Hopkins OMF and comply with applicable requirements for annual reporting/licensing, storage, shipping, record keeping, emergency planning, and disposal requirements Develop a SPCC plan to minimize potential long-term effects related to accidental spillage of petroleum products stored at the Hopkins OMF Tunnels designed to minimize inflow of groundwater through various design features and BMPs preventing hazardous materials or contaminated stormwater from entering groundwater <p>Short-term:</p> <ul style="list-style-type: none"> Develop RAPs for remediation in cases where the presence of contamination has been verified through the Phase II ESAs Follow OSHA guidelines during construction Prevent public exposure through physical contact with a contaminated material by site access barriers Use engineering controls and BMPs to avoid spills of hazardous materials during construction; this includes preparation and adherence to a SWPPP and best management practices, to limit and contain releases and spills to minimize the likelihood of soil and groundwater contamination during construction
	Mitigation Measures	<p>Short-term:</p> <ul style="list-style-type: none"> Conduct mitigation within the MPCA Brownfield Program regulatory framework and approved RAPs Implement RAPs, approved by MPCA, to address the risks identified in the Phase I and Phase II environmental site assessments Prior to the start of construction prepare, and with MPCA approval, prepare a CCP to address the discovery of unknown contamination Survey structures on acquired land for the presence of hazardous/regulated materials prior to their demolition or modification Handle and manage potentially hazardous materials in compliance with applicable regulatory standards and dispose of in accordance with an Hazardous Materials Abatement Plans for in-place hazardous/regulated materials, and the RAP/CCP for hazardous/regulated materials in the site soils
3.15 Electromagnetic Fields/ Electromagnetic Interference, and Utilities	Long-term Direct Impacts	<ul style="list-style-type: none"> No adverse impacts from electromagnetic fields due to the low levels of exposure to people riding the LRT or in adjacent buildings No adverse impacts from electromagnetic interference because there are no sensitive receptors in the study area No adverse impacts on utilities because conflicting utilities will be relocated and services maintained
	Long-term Indirect Impacts	<ul style="list-style-type: none"> No adverse impacts from electromagnetic fields or electromagnetic interference and no adverse impacts on utilities
	Short-term Impacts	<p>EMI/EMF:</p> <ul style="list-style-type: none"> No adverse impacts <p>Utilities:</p>

Environmental Category		Summary of Impacts and Mitigations
		<ul style="list-style-type: none"> Excavation and grading activities, placement of structural foundations and work that requires large-scale equipment could interfere with utilities Relocating water mains could temporarily affect access to and use of fire hydrants
	Commitments	<p>Long-term/Utilities:</p> <ul style="list-style-type: none"> Relocate all conflicting utilities to avoid utility impacts to and to maintain utility service, in accordance with the Southwest LRT Utility Relocation and Management Plan Include measures to minimize stray current and reduce amount of corrosion due to stray current Prior to construction, determine necessary improvements to transmission systems along the corridor through consultation with Xcel Energy <p>Short-term/Utilities:</p> <ul style="list-style-type: none"> Provide temporary utility connections to customers prior to permanent relocation activities Contact area utility companies and utility agencies to request providing line relocation measures and approval of the proposed alteration of utility lines prior to construction Notify affected businesses and residences of planned disruption of service due to construction activities Contact appropriate utility companies and agencies to identify utility lines discovered during construction that were not identified in the contract documents Coordinate with local and state agencies, as required, to relocate specific utilities outside the project corridor: <ul style="list-style-type: none"> Adhere to Minnesota Statute 216B, Public Utilities, which provides terms for which utility companies may operate in public right-of-way Conform to <i>MnDOT Utility Accommodation Policy</i>, which requires public and private utilities to obtain a permit to place utility facilities on trunk highway right-of-way Review any utility installations on, over, or under railroad property, with railroad(s) and obtain approval(s)
	Mitigation Measures	None
3.16 Energy	Long-term Direct Impacts	<ul style="list-style-type: none"> Beneficial effects: <ul style="list-style-type: none"> The Project will have an annual regional energy consumption 109 billion Btu lower than the No Build Alternative Changes due to mode shifts from single-occupant vehicles to transit, reducing energy consumption No adverse impacts
	Long-term Indirect Impacts	<ul style="list-style-type: none"> Beneficial effects: <ul style="list-style-type: none"> Changes due to mode shifts from single-occupant vehicles to transit, reducing passenger vehicle miles traveled Increase in energy consumption from new development and redevelopment No adverse impacts because new development is typically more energy efficient than existing or less dense development
	Short-term Impacts	<ul style="list-style-type: none"> No adverse impacts because energy used for production of raw materials and components for construction will be localized and temporary
	Commitments	<ul style="list-style-type: none"> Design the Project to incorporate opportunities to reduce energy consumption into the Project, including: <ul style="list-style-type: none"> Follow the State of Minnesota Sustainable Building Guidelines (MSBG-B3) Use highly efficient LED lighting throughout the Project (street lighting to building lighting) Maximize use of daylight at OMF, supplemented with lighting control management software Coordinate with Xcel Energy for efficient OMF heating, cooling, and lighting control systems Use energy recovery units in the OMF Use a high-efficiency chiller at OMF Use condensing boilers at OMF

Environmental Category		Summary of Impacts and Mitigations
		- Use closed-cell cooling tower (free winter cooling)
	Mitigation Measures	None
3.17 Cumulative Impacts	Cumulative Effects Assessment	Direct and indirect adverse impacts will be localized and the Project is not anticipated to generate substantial cumulative impacts for the environmental categories evaluated

^a This table summarizes the anticipated impacts and mitigation measures for the Project as identified in the Final EIS. All data in the table are approximate. See the corresponding sections of Chapter 3 for a more detailed description of the anticipated impacts, and mitigation measures. "Mitigation measures" are specific actions that will be incorporated into the project to address anticipated adverse impacts (see also 40 CFR 1508.20). "Commitments" are general actions that will be incorporated into the project that may not be tied to anticipated adverse impacts, such as the use of best management practices (BMPs) or public outreach strategies. If there are no mitigation measures identified for a specific type of impact area, it means that the avoidance measures identified for that environmental category will avoid any adverse environmental impacts for that category, and therefore, no mitigation measures are warranted.

^b 19 viewpoints were selected for assessment within six visual analysis units. The six visual analysis units and the exhibits on which they are mapped include Eden Prairie (Exhibit J-1), North Eden Prairie/Minnetonka/South Hopkins (Exhibit J 6), Hopkins (Exhibit J-9), St. Louis Park (Exhibit J-12), Kenilworth Corridor (Exhibit J 17), and Minneapolis Downtown Fringe (Exhibit J-24).

^c A traction power substation (TPSS) is an electrical substation that converts electric power from the form provided by the electrical power industry for public utility service to an appropriate voltage, current type, and frequency to supply railways, trams (streetcars), or trolleybuses with traction current.

^d The term "wetland" is used to describe any regulated aquatic resource, including streams. See Section 3.9 for additional information.

^e Long-term direct impacts on wetlands regulated under the Minnesota Wetlands Conservation Act are generally defined as impacts not fully restored within six months, and long-term direct impacts to wetlands regulated under the Clean Water Act are generally defined as impacts that are not fully restored.

^f Short-term impacts on wetlands under the Minnesota Wetlands Conservation Act are generally defined as impacts that will be fully restored within six months, and short-term impacts to wetlands regulated under the Clean Water Act are generally defined as impacts that will be fully restored.

^g If the noise mitigation guidelines, as contained in the Regional Transitway Guidelines (March 2016) (see Appendix D), are found to not meet reasonable criterion or if property owner(s) does not approve sound insulation, the Project will result in additional residual noise impacts. Noise mitigation measures include the implementation of quiet zones in some areas where the light rail alignment will be adjacent to freight rail. Quiet zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented by the Project and consistent with quiet zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of quiet zones. If the municipality fails to apply for a quiet zone or FRA fails to approve the quiet zone, the Project may result in additional residual noise impacts. See Section 3.12 and Table 3.12-7 for additional information.

Note: APE = area of potential effects; BMP = best management practice; CWA = Clean Water Act, CCP = Construction Contingency Plan; CFR = Code of Federal Regulations; EIS = Environmental Impact Statement; dB = decibels; dBA = A-weighted decibels; EPA = U.S. Environmental Protection Agency; HCRRA = Hennepin County Regional Railroad Authority; MOA = Memorandum of Agreement; MnDOT = Minnesota Department of Transportation; MnDNR = Minnesota Department of Natural Resources; MnHPO = Minnesota Historic Preservation Office; MPCA = Minnesota Pollution Control Agency; MPRB = Minneapolis Park and Recreation Board; OMF = Operation and Maintenance Facility; OSHA = Occupational Health and Safety Administration; RAP = Response Action Plan; SOI's Standards = Secretary of the Interior's Standards for the Treatment of Historic Properties; SPCC = Spill Prevention, Control, and Countermeasure; SWPPP = Stormwater Pollution Prevention Plan; T&E = threatened and endangered; USACE = U.S. Army Corps of Engineers; USFWS = U.S. Fish and Wildlife Service; U.S.C. = United States Code; Uniform Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act, WCA = Minnesota Wetlands Conservation Act of 1991.

Source: Council, 2015.

3.1 Land Use

This section describes long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on land use (see Section 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis; a description of existing land use conditions; an assessment of the alternative's compatibility with applicable adopted land use plans and anticipated environmental consequences related to land use; and a description of mitigation measures to implement with the Project.

3.1.1 Regulatory Context and Methodology

This section describes regulatory context and methodology for the land use evaluation, and includes a summary of relevant laws and executive orders, an overview of the methodology, and a description of the land use study area for the analyses completed as part of the land use evaluation.

State, regional and local land use policies and plans form the basis for discussing land use conflicts in the land use study area. Local municipalities have land use controls available to them in the form of comprehensive plans guiding land use and city zoning codes guiding development. There are no other specific laws or executive orders that regulate the consideration of land use impacts as part of preparing environmental review documents.

The methodology used to describe the affected environment and evaluate potential environmental impacts to land use generally followed the following steps:

- 1) Review of the *existing land use* and *planned land use* (MetroGIS Datafinder, *Generalized Land Use*, 2010, and *Planned Land Use*, 2014, respectively)⁵
- 2) Review of the adopted land use plans and policies of each city where the proposed light rail improvements will be located
- 3) Assessment of the compatibility of the No Build Alternative and the Project with adopted land use plans and policies
- 4) Assessment of the potential long-term direct and indirect impacts to land use as a result of the No Build Alternative and the Project

The assessments in this section include a qualitative review of the degree to which the No Build Alternative and Project are compatible with, or supportive of, adopted comprehensive land use plans based on a review of published local and regional planning documents. In addition, the assessment includes: 1) a quantitative estimation of the direct, long-term conversion of existing land uses resulting from property acquisitions for the Project; 2) an assessment of whether land use conversions resulting from property acquisition will affect the overall land use character of area; and 3) a qualitative assessment of the indirect effect of the Project on land uses surrounding station areas, based in part on a review of the Southwest Corridor station area planning efforts (*Southwest Corridor Investment Framework* [Hennepin County, 2013]).

⁵ This section uses the following definitions of *existing land use* and *planned land use*. *Existing land use* is defined as the way a parcel of land or right-of-way is currently being used by the existing property owner, independent of its zoning or comprehensive plan designation. *Existing land use* represents the use of land under current conditions. The description of existing land uses is based on the *generalized land use categories* developed by the Council and documented in the MetroGIS Datafinder, *Generalized Land Use*, 2010. The Council routinely develops *generalized land use category* data for the Twin Cities region to support its statutory responsibilities and assist in long range planning for the seven-county, Twin Cities Metropolitan Area. This dataset is developed in consultation with each of the communities in the Metropolitan Area. *Planned land use* is defined as the land use category for a parcel of land or right-of-way as designated in the applicable adopted comprehensive land use plan for that parcel or right-of-way. *Planned land uses* are based on data collected by the Council and represent the approved land use plans and subsequent amendments for each community. The Council routinely compiles individual land use plans and plan amendments from communities within the seven-county Twin Cities metropolitan area (MetroGIS Datafinder, *Planned Land Use*, 2014).

The land use study area is one-half-mile on either side of the centerline proposed light-rail alignment, a one-half-mile radius around the center point of the proposed Hopkins Operations and Maintenance Facility (OMF), and a one-half mile radius around each proposed station location.

3.1.2 Affected Environment

This section describes the existing land use and planned land use conditions within the land use study area. This section also includes a description of the planning and policy framework in the jurisdictions affected by the Project, and a review of the Project's compatibility with local plans and policies. The description of existing land uses represents land as it is currently used and the description of planned land use is based on the designation within adopted land use plans (see Section 3.1.1, including footnote 1, for additional information on definitions and data sources used throughout this section). The description of the planning and policy framework is based on a review of relevant plans and policies for the affected jurisdictions.

3.1.2.1 Existing and Planned Land Uses

This section describes the existing and planned land uses within the land use study area. This section includes: (1) a corridor-wide summary of existing and planned land uses; and (2) a more detailed description of existing and planned land uses around each of the proposed light rail stations.

Table 3.1-1 and Exhibits 3.1-1 and 3.1-2 present the existing land use for the land use study area.⁶ In total, the land use study area covers approximately 9,702 acres of land (about 15 square miles) in the Cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis. The predominant land uses in the Project area are single-family residential (20 percent), industrial (15 percent), and parks and open space (12 percent).⁷

Because the Project has been incorporated into many local land use plans, some new development or redevelopment is expected to occur within the land use study area as a result of the Project, particularly within one-half mile of the proposed stations. In comparing existing land uses to approved land use plans, land uses around several stations are anticipated to shift to higher-density, mixed-use development, as allowed under approved zoning regulations (refer to Section 3.1.3.3 for additional detail on indirect land use impacts related to station area development). Exhibits 3.1-3 and 3.1-4 and Table 3.1-2 show the planned land uses for the land use study area, based on the approved land use plans for the region (MetroGIS Datafinder, *Generalized Land Use*, 2010, and *Planned Land Use*, 2014).

The Project includes 16 proposed light rail stations, which are illustrated on Exhibits 3.1-1 through 3.1-4 and described in Section 2.1.1.1. The following provides a description of the existing use, zoning, and comprehensive plan designations of land within the Project's proposed light rail station areas in the Cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

As with the assessment of land use within the Project's land use study area, existing land uses near the light rail station areas are based on a land use dataset developed by the Council (MetroGIS Datafinder, *Generalized Land Use*, 2010) (see Exhibits 3.1-1 and 3.1-2). Zoning is based on a city's adopted land use plan. While zoning provides the legal basis for shaping future development according to adopted plans, it does not necessarily reflect the land use that is currently in place, because some uses are permitted through conditional use permits or other local permitting. Planned land uses are described herein as they are documented in adopted comprehensive plans and station area plans (see Exhibits 3.1-3 and 3.1-4).

⁶ The land use categories presented in the table are the *generalized land use categories* from the MetroGIS Datafinder, *Generalized Land Use*, 2010.

⁷ See Section 3.5 and Chapter 6 for property acquisitions affecting Section 106 and Section 4(f) properties. As noted in Section 3.6, no portions of any Section 6(f) properties would be acquired under the Project.

TABLE 3.1-1

Existing Land Uses within One-half Mile of the Project

Existing Land Use Category ^a	Acreage	% of Total Land
Residential - Single Family (detached and attached)	1,959	20%
Residential - Multifamily	664	7%
Retail and Other Commercial	910	9%
Office	456	5%
Industrial	1,429	15%
Mixed Use	500	5%
Agricultural	0.3	0%
Institutional	461	5%
Parks and Open Space ^b	1,189	12%
Open Water ^c	573	6%
Freight Railroad (private) ^d	108	1%
Undeveloped ^e	1,453	15%
Total	9,702	100%

^a Existing land use is defined as land as it is currently being used, independent of its designation within an applicable adopted comprehensive land use plan. The land use categories used in this table are the *generalized land use categories* from the MetroGIS Datafinder, *Generalized Land Use*, 2010.

^b Publicly owned land within existing freight rail corridors (i.e. Bass Lake Spur, Kenilworth Corridor, and BNSF Wayzata Subdivision) is included in the totals for Parks and Open Space.

^c Open Water is a land use category used in MetroGIS Datafinder that refers to open water features for lakes and rivers.

^d The freight railroad land use category represents privately owned land occupied or intended to be occupied by railroad track lines or similar uses.

^e Undeveloped land includes approximately 766 acres of land designated within the Major Highway category of the *generalized land use categories* from the MetroGIS Datafinder, *Generalized Land Use*, 2010. Approximately 687 acres of the land within the - Undeveloped category is land that has the potential to be developed in the future, depending on specific zoning requirements and site conditions.

Source: Metropolitan Council, MetroGIS Datafinder, *Generalized Land Use*, 2010

TABLE 3.1-2

Planned Land Uses within One-half Mile of the Project

Land Use Plan Category ^a	Acreage	% of Total Land
Low-Density Residential	1,123	12%
Medium-Density Residential	556	6%
High-Density Residential	299	3%
Commercial	714	7%
Office/Business Park	794	8%
Town Center	110	1%
Urban Neighborhood	881	9%
Industrial	1,294	13%
Mixed Use	959	10%
Public / Institutional	326	3%
Park, Recreational, and Open Space	1,060	11%
Open Water	567	6%
Vehicular Right-of-Way	831	9%
Railway	137	1%
Trail	51	0%
TOTAL	9,702	100%

^a Land use plan categories are based on the land use designations within applicable adopted local land use comprehensive plans, as defined within the MetroGIS Datafinder, *Planned Land Use* (Metro, 2010).

Source: Metropolitan Council, MetroGIS Datafinder, *Planned Land Use*, 2010.

EXHIBIT 3.1-1

Existing Land Use – Eden Prairie, Minnetonka, and Hopkins

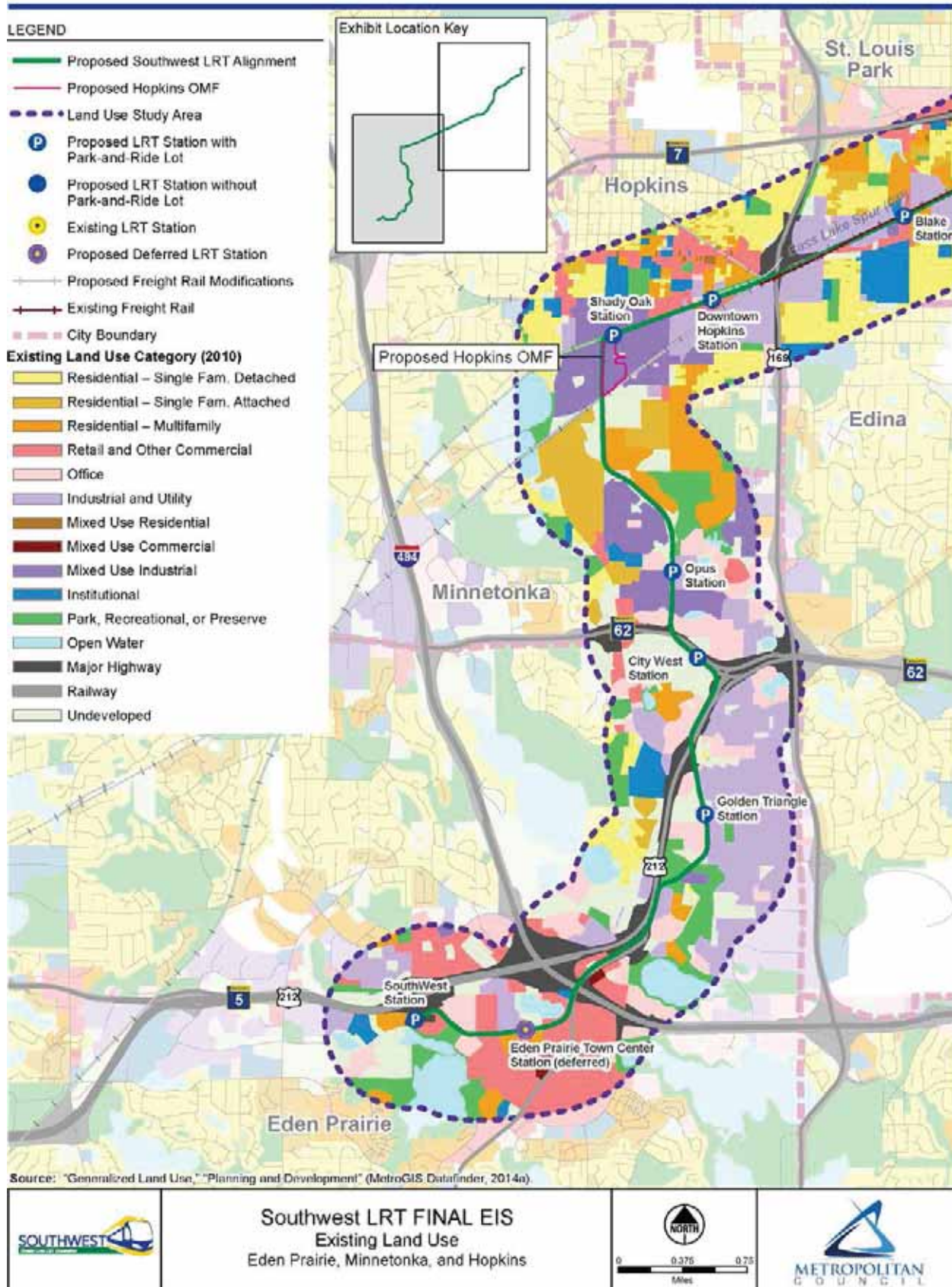


EXHIBIT 3.1-2

Existing Land Use – St. Louis Park and Minneapolis

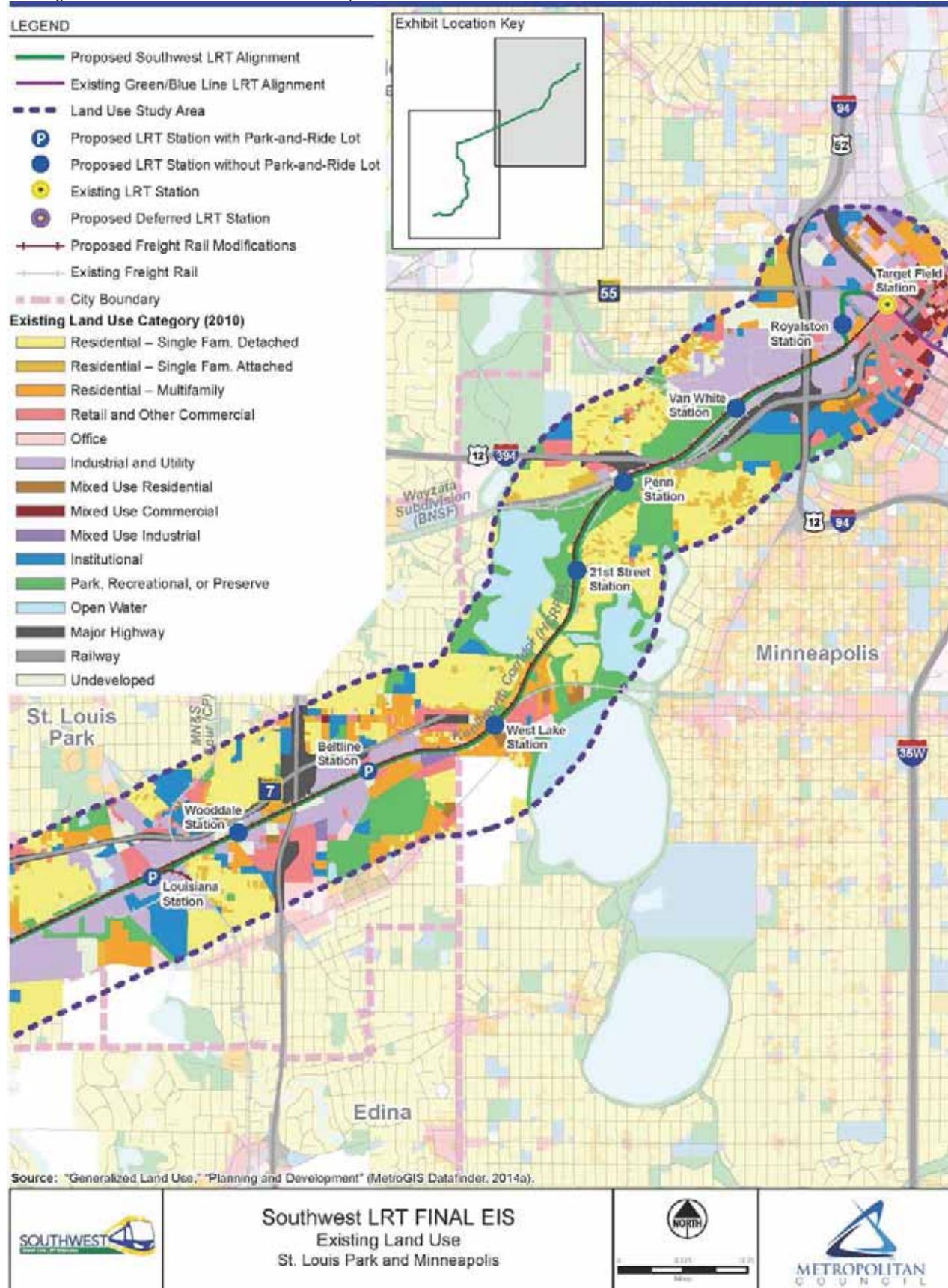


EXHIBIT 3.1-3

Planned Land Use – Eden Prairie, Minnetonka, and Hopkins

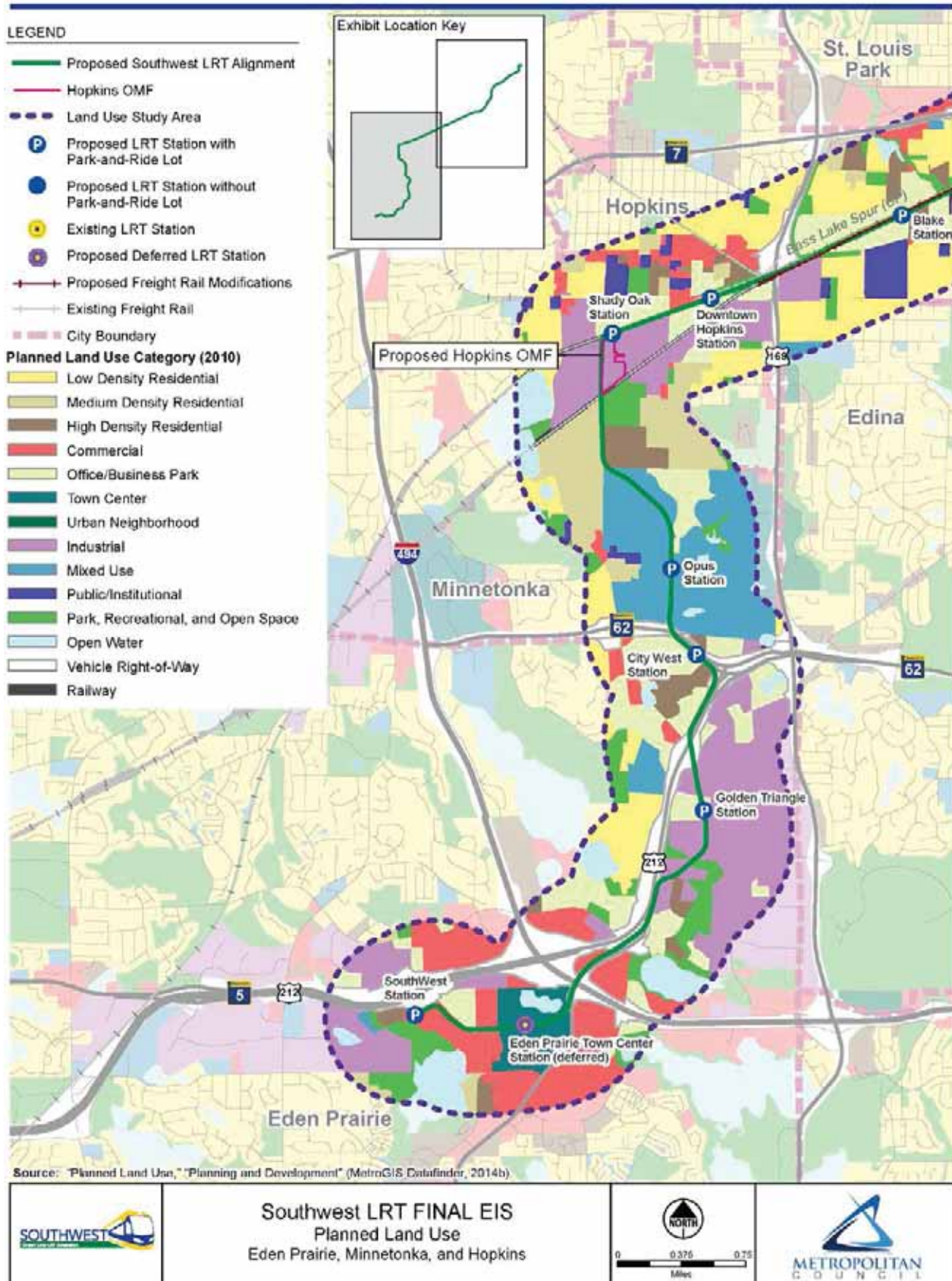
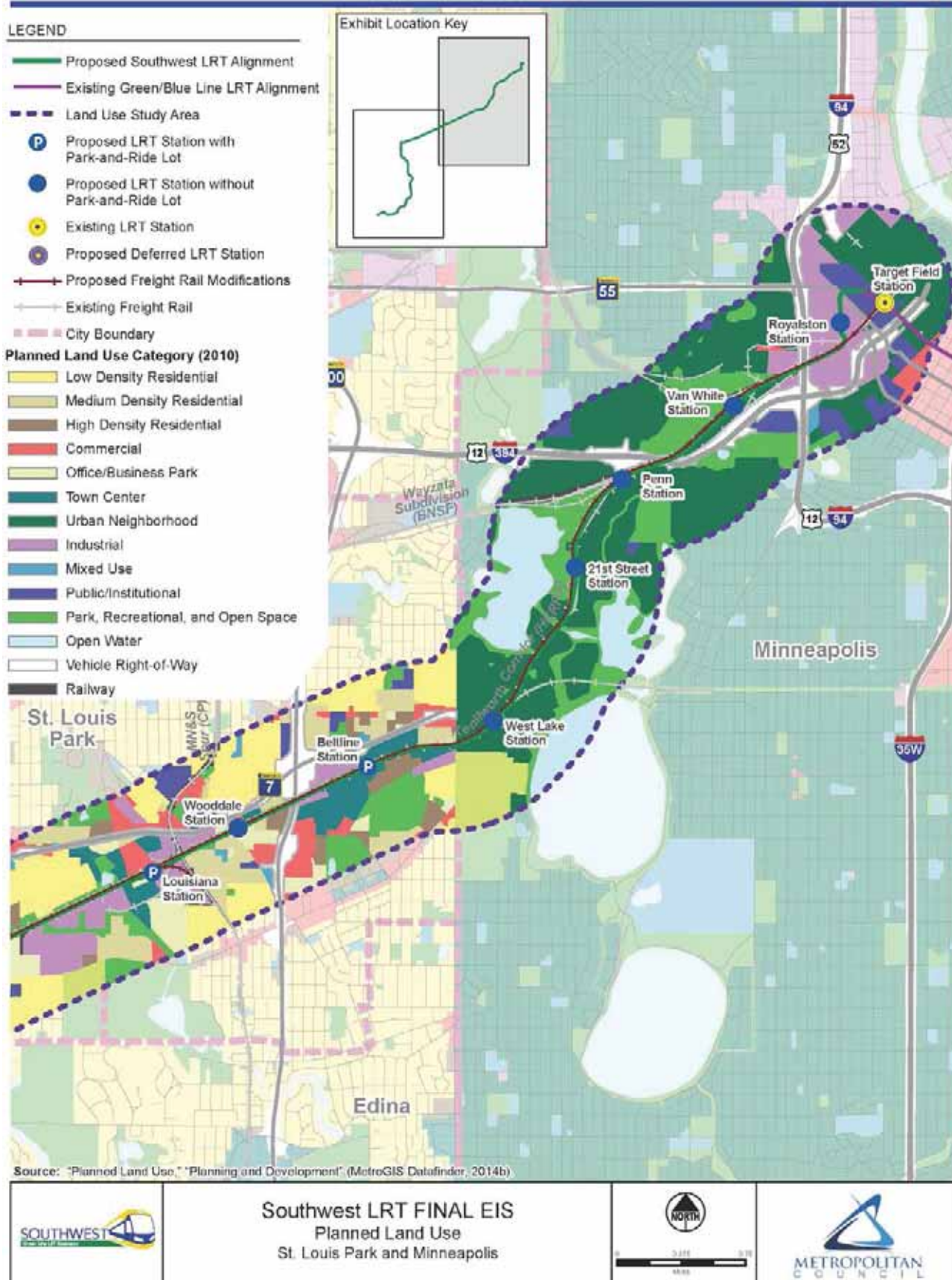


EXHIBIT 3.1-4

Planned Land Use – St. Louis Park and Minneapolis



Existing land uses around the 16 proposed light rail stations include areas with a mix of commercial, office, multifamily residential, institutional and light industrial (SouthWest, Town Center, Downtown Hopkins, Wooddale, and West Lake Stations), areas that are major employment centers (Golden Triangle, City West, and Opus Stations), areas that are primarily industrial with some nearby residential (Shady Oak, Louisiana, Beltline, and Royalston Stations), and areas that are primarily residential and open space (21st Street and Penn Stations). These land uses are consistent with existing zoning and compatible with the proposed Project. Existing land uses throughout the land use study area will benefit from the improved transit access provided by the proposed Project.

All of the local communities in the land use study area have adopted comprehensive plans and have participated in land use planning for station areas. Planned uses for all station areas, except the 21st Street Station, which is fully built existing residential, include areas for intensified mixed-use development that are supportive of and compatible with the proposed Project. These planned uses are consistent with comprehensive plans or station area plans and support opportunities for redevelopment and transit-oriented development in the land use study area. Station area plans emphasize a pedestrian-friendly, mixed-use environment with a multimodal transit network. Planned land uses throughout the land use study area would benefit from the improved access provided by the proposed Project.

The *Southwest Corridor Investment Framework* (Hennepin County, 2013) provides a description of the existing and planned land uses in the vicinity of the proposed light rail stations (see Appendix D for instructions on how to review a copy of that report).

3.1.2.2 Adopted Plans and Policies

This section provides a summary of relevant planning documents from state, regional, and local agencies with jurisdiction over the land use study area. Included are adopted comprehensive land use plans, transportation system plans, small area plans, and specific planning studies from the Minnesota Department of Transportation (MnDOT), the Metropolitan Council, Hennepin County, and the five cities through which the Project will pass. Table 3.1-3 summarizes the contents of these adopted plans and studies.

Section 3.1.2.3, “Compatibility with Adopted Plans and Policies,” evaluates the degree to which the No Build Alternative and Project are compatible with or supportive of these plans and studies. Assessing the compatibility of the alternatives with state, regional, and local land use plans is important because one of the purposes of the Project is to support those plans and the growth and development goals and objectives that are encompassed in those plans.

TABLE 3.1-3
Adopted Plans and Policies

Plans and Policies	Date Adopted	Summary
Metropolitan Council		
<i>Thrive MSP 2040</i>	2015	Specifies policies in this long-range plan and vision that drive other plans, including the <i>Transportation Policy Plan</i> , the <i>Regional Parks Policy Plan</i> , and the <i>Housing Policy Plan</i> . Includes official population and employment projections for the region.
<i>2040 Transportation Policy Plan</i>	2015	Identifies a long term vision for the region, which includes supporting growth through a connected and sustainable transportation system. Specifies goals for regional transportation systems; outlines policies and priority investments to achieve these goals. Includes a Transit Investment Direction Plan, which identifies the Southwest LRT project (METRO Green Line Extension) as a programmed improvement under the “Current Revenue Scenario.”
<i>2040 Regional Parks Policy Plan</i>	2015	Identifies goals and outcomes for the regional park system in support of the Thrive MSP 2040 plan, and the strategies designed to meet those goals. Includes a systems plan which lists planned park improvements and planned expansions of the regional trail network.
Minnesota Department of Transportation		
<i>Statewide Multimodal Transportation Plan</i>	September 2012	Describes the transportation policy framework for all transportation modes in Minnesota over the next 20 years and how land use and transportation systems should be better integrated.

Plans and Policies	Date Adopted	Summary
<i>Minnesota GO State Rail Plan 2015</i>	2015	Provides plans and strategies to improve the condition and capacity of Minnesota's primary railroad arterials, intermodal service access, and passenger rail service. Includes a general description of Bass Lake Spur improvements planned as part of the Project. Discusses continued freight rail operations for TC&W in the Kenilworth Corridor, as part of the LPA for the Project as approved through the municipal consent process.
Hennepin County		
<i>2030 Hennepin County Transportation Systems Plan</i>	October 2011	Provides policy guidance on future county transportation investments and strategies to support different transportation projects, including light rail.
<i>2030 Hennepin County Comprehensive Plan</i>	June 2011	Provides planning elements (wastewater and sewage systems, regional park systems, surface water management, and transportation) with specific goals to support light rail by moving environmental processes forward on major transit corridors.
City of Eden Prairie		
<i>City of Eden Prairie Comprehensive Guide Plan</i>	2009	Supports LRT in the transit corridor by planning for transit supportive uses and densities within one-half mile of the stations proposed in the Town Center and the Golden Triangle Area.
<i>Town Center Plan</i>	2009	Supports, enables, and encourages the planning principles for the Town Center outlined in the Major Center Area Study, especially those that promote TOD and integrate LRT stops with existing infrastructure and existing and future development.
City of Minnetonka		
<i>City of Minnetonka Comprehensive Guide Plan</i>	2008	Finds that a fixed route transit system that penetrates the Golden Triangle would serve as a catalyst for redevelopment and that a balanced TOD land use pattern would extend the life of capital investments in infrastructure and potentially create a catalyst for future redevelopment.
City of Hopkins		
<i>Hopkins Comprehensive Plan</i>	2009	Provides a vision for the city's future that includes enhancing downtown Hopkins, redeveloping transportation corridors, protecting open spaces, and making informed decisions regarding transportation infrastructure. Includes a land use plan for the City.
<i>Blake Road Corridor Small Area Plan</i>	2009	Serves as a policy document for the Blake Road Corridor within which an LRT station for the Southwest Transitway is proposed.
<i>Hopkins Station Area Plan</i>	2007	Develops Station Area Plans for the Shady Oak, Hopkins, and Blake LRT Stations, and provides the first elements of a "road map" to guide future integrated transportation and land use planning initiatives within the City of Hopkins.
City of St. Louis Park		
<i>City of St. Louis Park Comprehensive Plan</i>	2009	Focuses on land use planning efforts around the three stations proposed in St. Louis Park. References a study of the MN&S alignment and impacts to traffic circulation and neighborhoods. Includes goals to minimize impacts of railroad operations in St. Louis Park and address the potential rerouting of freight rail in St. Louis Park.
<i>Connect the Park! Plan</i>		Provides 10-year plan to add additional sidewalks, trails, bike lanes, and bikeways throughout the community to provide local and regional connectivity, improve safety and accessibility, and enhance overall community livability. Identifies objective to develop an interconnected network of pedestrian and bicycle routes linked to transit systems.
City of Minneapolis		
<i>Loring Park Neighborhood Master Plan</i>	2013	Includes brief recommendations for bicycle and pedestrian connections to the Southwest LRT stations.
<i>Minneapolis Climate Action Plan</i>	2013	Supports the build-out of transit lines, including the Southwest LRT Project, as a strategy to reduce greenhouse gas emissions.

Plans and Policies	Date Adopted	Summary
<i>Access Minneapolis</i>	2011	Comprises six main components that include the Downtown Action Plan, the Citywide Action Plan, Design Guidelines for Streets and Sidewalks, Street Car Planning, the Pedestrian Master Plan, and the Bicycle Master Plan. Identifies specific actions that the City and its partner agencies (Metro Transit, Metropolitan Council, Hennepin County, MnDOT) need to take within the next 10 years to implement the transportation policies.
<i>North Loop Small Area Plan: Update to the Downtown East/North Loop Master Plan</i>	2010	Updates the <i>Downtown East/North Loop Master Plan</i> (City of Minneapolis Planning Department, 2003), which develops a vision and a framework for how new growth should occur in the underdeveloped districts of Downtown Minneapolis, particularly in areas surrounding proposed rail transit stations. This includes land use plans and design considerations for the proposed Royalston Station area.
<i>Minneapolis Plan for Sustainable Growth (update of Minneapolis Comprehensive Plan)</i>	2009	Updates <i>The Minneapolis Plan of 2000</i> (City of Minneapolis Community Planning and Economic Development Department, Planning Division, 2000) as the new comprehensive plan for the city. Includes an outline for the creation of Transit Station Areas (TSAs), which is a land use policy feature intended to promote growth specifically around transit stations along fixed-route transitways, such as Southwest LRT.
<i>Lyn-Lake Small Area Plan</i>	2009	Contains recommendations designed to strengthen the business core, and provides design considerations in the case that rail service is implemented within the Midtown Greenway.
<i>Uptown Small Area Plan</i>	2008	Promotes higher residential and employment densities, urban design specifications, and enhanced connections among the Midtown Corridor, the surrounding lakes area, and the urban core. Includes East Isles, Lowry Hill East, East Calhoun, and Calhoun Area Residents Action Group (CARAG).
<i>Minneapolis Parks and Recreation Board Comprehensive Plan</i>	2007	Provides a general vision and strategies for implementation for parks within the City of Minneapolis. Identifies continued park/open space use for the land adjacent to the Kenilworth Corridor near Cedar Lake. Includes criteria for parcels that are considered for “disposition” (disposal), such as space around Cedar Lake. Park/open space use must meet certain criteria, such as not diminishing a parcel’s recreation function.
<i>Bassett Creek Valley Master Plan</i>	2007	Envisions a system of existing and proposed parks and open space integrated with a revitalized mixed-use urban village immediately west of downtown Minneapolis through which the Project alignment runs. Includes future land use plans within the vicinity of the proposed Royalston Station.
<i>Midtown Greenway Land Use and Development Plan</i>	2007	Provides policy guidance and recommendations for future land use development along the Midtown Corridor (referred to as the Midtown Greenway), evaluates the long-term viability of adjacent land uses, and provides guidance for planned land uses.
<i>Bryn Mawr Neighborhood Land Use Plan</i>	2005	Includes a land use plan for the area around the proposed Penn Ave Station. Identifies the potential for additional neighborhood residential and commercial development.
<i>Midtown Minneapolis Land Use and Development Plan</i>	2005	Sets out guidelines for future development and infrastructure improvements along Lake St in Minneapolis.

Source: Metropolitan Council, 2015. Refer to Appendix D for instructions on how to access the plans and policies referenced in this table.

3.1.2.3 Compatibility with Adopted Plans and Policies

As described in Section 3.1.2.2, “Adopted Plans and Policies,” a range of relevant state, regional, and local planning documents were reviewed to establish the planning context for the land use study area. The Project was then evaluated to determine the degree to which it would be compatible with or supportive of the planning documents identified, based on a qualitative assessment. Table 3.1-4 summarizes the results of this analysis:

Items marked as **Compatible/Project Referenced** signify that the Southwest LRT Project would be compatible with the identified plan or study because the plan has goals or policies that support transit, multimodal transportation, and/or transit-oriented development and because the Project is specifically mentioned in the plan document. For example, the plan might support the Southwest LRT Project in general, include support for the Project, or provide land use plans and policies specific to proposed Southwest LRT station areas.

- Items marked as **Compatible** indicate plans that have been determined to be compatible with the Project, but the plans do not specifically cite the Southwest LRT Project. In these plans or studies, the Project was determined to be compatible because of support for transit and/or transit-oriented development. For example, a plan might be generally supportive of LRT or TOD, but might not specifically reference the proposed Southwest LRT Project.
- Items marked as **Incompatible** indicate that the Project is incompatible with the plan or study because the plan has specific elements that are unique to either the No Build Alternative or the Project or the plan is not supportive of transit, multimodal transportation, or transit-oriented development. For example, a plan might expressly call for a specific station or alignment that is not a part of the No Build Alternative or the Project under consideration. In that case, that alternative would not be compatible with that particular plan. An item that is marked as Compatible/Project Referenced would be Incompatible for the No Build Alternative.

TABLE 3.1-4

No Build Alternative and the Project Compatibility with Adopted Plans and Policies

Jurisdiction/ Adopted Plans and Policies	Compatibility with Plans/Policies		Compatibility Assessment Rationale (No Build Alternative and the Project)
	No Build Alternative	Project	
Metropolitan Council			
<i>Thrive MSP 2040</i>	Incompatible	Compatible/ Referenced	Includes Southwest LRT as a transitway recommendation
<i>2040 Transportation Policy Plan</i>	Incompatible	Compatible/ Referenced	Includes Southwest LRT (METRO Green Line Extension) in its “Current Revenue” funding scenario
<i>2040 Regional Parks Policy Plan</i>	Compatible	Compatible	Does not specifically mention Southwest LRT or either alignment but is supportive of multimodal access
Minnesota Department of Transportation			
<i>Statewide Multimodal Transportation Plan</i>	Compatible	Compatible	Does not specifically mention Southwest LRT or either alignment, but is supportive of transit and multimodal transportation
<i>Minnesota GO State Rail Plan, 2015</i>	Incompatible	Compatible/ Referenced	Includes improvements to the Bass Lake Spur and Kenilworth Corridor as Part of the METRO Green Line Extension. Acknowledges the approval of the shallow tunnel in the Kenilworth Corridor as part of the municipal consent process for the Project.
Hennepin County			
<i>2030 Hennepin County Transportation Systems Plan</i>	Incompatible	Compatible/ Referenced	Includes Southwest LRT as a transitway recommendation
<i>2030 Hennepin County Comprehensive Plan</i>	Incompatible	Compatible/ Referenced	Includes Southwest LRT as a transitway recommendation
City of Eden Prairie			
<i>City of Eden Prairie Comprehensive Guide Plan</i>	Incompatible	Compatible/ Referenced	Includes land use and infrastructure plans for the proposed Eden Prairie Town Center and Golden Triangle Stations
<i>Town Center Plan</i>	Incompatible	Compatible/ Referenced	Includes land use and infrastructure plans for the proposed Eden Prairie Town Center Station
City of Minnetonka			
<i>City of Minnetonka Comprehensive Plan</i>	Incompatible	Compatible/ Referenced	Expresses support for the proposed Golden Triangle Station
City of Hopkins			
<i>City of Hopkins Comprehensive Plan</i>	Incompatible	Compatible/ Referenced	Includes land use plan for the proposed Shady Oak, Downtown Hopkins, and Blake stations
<i>Blake Road Corridor Small Area Plan</i>	Incompatible	Compatible/ Referenced	Includes land use plan for the proposed Shady Oak, Downtown Hopkins, and Blake stations

Jurisdiction/ Adopted Plans and Policies	Compatibility with Plans/Policies		Compatibility Assessment Rationale (No Build Alternative and the Project)
	No Build Alternative	Project	
<i>Hopkins Station Area Plan</i>	Incompatible	Compatible/ Referenced	Includes land use plan for the proposed Shady Oak, Downtown Hopkins, and Blake stations
City of St. Louis Park			
<i>City of St. Louis Park Comprehensive Plan</i>	Compatible	Compatible	Is supportive of transit but specifically addresses concerns about the relocation of freight rail; those concerns have been addressed through the proposed Project; includes land use plans compatible with proposed Project
<i>Elmwood Area Land Use, Transit and Transportation Study</i>	Incompatible	Compatible/ Referenced	Includes future land use and infrastructure plans for the proposed Beltline and Louisiana stations
<i>Connect the Park! Plan</i>	Incompatible	Compatible/ Referenced	Includes future trails and sidewalks connecting to proposed Southwest LRT stations
City of Minneapolis			
<i>Loring Park Neighborhood Master Plan</i>	Compatible	Compatible	Does not specifically mention Southwest LRT or specify an alignment for the transitway; however, plan is supportive of transit and transit-oriented development
<i>Minneapolis Climate Action Plan</i>	Compatible	Compatible	Does not specifically mention Southwest LRT or specify an alignment for the transitway; however, multimodal transportation is compatible with goals of the climate action plan
<i>Access Minneapolis</i>	Compatible	Compatible	Does not specifically mention Southwest LRT or specify an alignment for the transitway; however, transit improvements and multimodal transportation are key elements of the goals of the plan
<i>North Loop Small Area Plan: Update to the Downtown East/North Loop Master Plan</i>	Incompatible	Compatible/ Referenced	Includes recommendations relative to the proposed Royalston Station
<i>Minneapolis Plan for Sustainable Growth (update of Minneapolis Comprehensive Plan)</i>	Compatible	Compatible	Does not specifically mention Southwest LRT or specify an alignment for the transitway; however, the goals of the plan are supportive of transit, multimodal transportation, and transit-oriented development
<i>Lyn-Lake Small Area Plan</i>	Compatible	Compatible	Does not specifically mention Southwest LRT or specify an alignment for the transitway; however, the goals of the plan are supportive of transit, multimodal transportation and transit oriented development
<i>Uptown Small Area Plan</i>	Compatible	Compatible	Does not specifically mention Southwest LRT or specify an alignment for the transitway; however, the goals of the plan are supportive of transit, multimodal transportation, and transit-oriented development
<i>Minneapolis Parks and Recreation Board Comprehensive Plan</i>	Compatible	Compatible	Does not specifically mention Southwest LRT or specify an alignment for the transitway; however, the plan is supportive of multimodal access
<i>Bassett Creek Valley Master Plan</i>	Incompatible	Compatible/ Referenced	Includes land use and infrastructure plans for the proposed Royalston Station
<i>Midtown Greenway Land Use and Development Plan</i>	Compatible	Compatible	Does not specifically mention Southwest LRT or specify an alignment for the transitway; however, the goals of the plan are supportive of transit, multimodal transportation, and transit-oriented development
<i>Bryn Mawr Neighborhood Land Use Plan</i>	Incompatible	Compatible/ Referenced	Includes land use and infrastructure plans for the proposed Penn Station
<i>Midtown Minneapolis Land Use and Development Plan</i>	Compatible	Compatible	Does not specifically mention Southwest LRT or specify an alignment for the transitway; however, the goals of the plan are supportive of transit, multimodal transportation, and transit-oriented development

Source: Metropolitan Council, 2015. Refer to Appendix D for instructions on how to access each of the plans and policies included in the table.

The Project is compatible with adopted plans and policies. This finding reflects the advanced planning completed over the past several years at the regional and local levels in anticipation of the proposed Southwest LRT Project. As noted in Table 3.1-4, many of the applicable adopted land use plans and policies have been developed or amended to specifically include or reflect the Southwest LRT Project rather than the No Build Alternative. Others have goals and policies that are supportive of transit improvements, multimodal transportation, and/or transit-oriented development. At the regional level, Metropolitan Council and Hennepin County plans support the proposed Southwest LRT Project. At the local level, all of the affected municipalities have plans and policies that support transit improvements and many have plans that specifically support the proposed Project, including several station area plans that identify future transit-supportive land uses surrounding station areas. In summary, the Project is compatible with all identified plans and policies.

3.1.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts on land use from the Project. As part of this evaluation, this section includes an evaluation of compatibility with adopted local and regional planning documents.

3.1.3.1 Long-term Direct Impacts on Land Use

Under the Project, long-term direct changes in land use will occur in locations where acquired property will be converted to a public transportation-related use. As described in Section 2.1.1.1, under the Project the new transportation use will include the following: the light rail alignment (e.g., tracks, ballast, overhead contact system wires, and poles); light rail stations and park-and-ride lots; light rail traction power substations and signal bungalows; associated roadway, pedestrian, and bicycle improvements; and associated freight rail infrastructure modifications.

Direct changes in land use under the Project will primarily be limited to station areas and to access, circulation improvements to those stations, and to sections of the proposed light rail alignment where there is currently no publicly owned right-of-way. The Project's effect on land use will be somewhat limited because the proposed light rail alignment will primarily be located within existing public rights-of-way, such as the currently owned property by the Hennepin County Regional Railroad Authority [HCRRA] and reserved for light rail and other transportation use. Table 3.1-5 summarizes the anticipated direct land use changes that will result from the Project, by land use type. Approximately 143 acres of land will be acquired for the Project and converted to public transportation purposes. The affected land will include the acquisition of privately owned industrial, commercial, and residential land, as well as publicly and privately owned parks and open space, publicly owned rights-of-way (i.e., HCRRA), and privately owned railroad rights-of-way (i.e., CP and BNSF).

Of the land to be acquired, approximately 86 acres are currently part of an existing railroad corridor (i.e., Bass Lake Spur, Kenilworth Corridor, and Wayzata Subdivision). Refer to Section 4.4.3.1 for more information on the characteristics of these corridors. Approximately 32 acres are privately owned property within the Bass Lake Spur and Wayzata Subdivisions and approximately 54 acres are public property, currently owned by HCRRA within the Bass Lake Spur and Kenilworth Corridor. Final ownership of these rights-of-way will be determined as Engineering progresses, but it is likely that portions of the railroad corridors will be transferred to public ownership, with continued operating rights for TC&W, which currently operates in these corridors.

While the acquisition of property for the Project would change the land use of specific parcels, the acquisitions are not likely to change the overall character of land within the land use study area. For the purposes of this section, a change in the use of a single parcel of land is not the same as a change in the land use of the surrounding neighborhood. That is, a commercial district that loses one or more commercial buildings is still a commercial district; similarly, a residential neighborhood that gains higher-density residential uses, or compatible mixed-use or commercial development, would still be a residential neighborhood. While the Project will result in changes to the existing use of particular parcels of land, those modifications will not change the overall land use characteristics of the land use study area. Generally, the acquisitions represent a small fraction (approximately 2 percent) of the total land in the land use study area,

and no major changes to area land use patterns are expected as a result of the acquisitions. In addition, some of the properties the Project will partially acquire will leave sufficient land for redevelopment, which would reduce long-term impacts to land use, compared to full acquisition of the properties.

TABLE 3.1-5

Direct Changes in Land Use for the Project^a

General Land Use Category	Area Converted to Public Transportation Use (acres) ^a	Percent of Total Project Land Converted
Parks and Open Space ^b	7.2	5%
Industrial	60.7	42%
Commercial/Mixed Use ^c	31.4	22%
Residential	6.0	4%
Public/Institutional	5.7	4%
Private railroad right-of-way ^d	31.9	22%
TOTAL	142.9	100%

^a The nature of the land purchase and agreements between HCRRA, the Council and CP has not been determined. Final ownership of these rights-of-way will be determined as Engineering progresses, but it is likely that railroad corridors (i.e., Bass Lake Spur and Kenilworth Corridor,) will be transferred to public ownership, with continued operating rights for TC&W), which currently operates in these corridors.

^b Includes all parks and open space, including 4(f) properties. See Section 3.6 for more information on parks, recreation areas, and open space, including a Section 4(f) evaluation.

^c As described in Section 2.1.1, the Eden Prairie Town Center Station and associated roadway improvements are deferred and are not expected to be in place when the Project opens in 2020. The station and associated roadway improvements are planned to be in place by 2040. If the station and associated improvements are not in place by 2040, there would be a reduction in the amount of land acquired by the Project in the vicinity of the station by 2040, and thus the amount of commercial land converted to public transportation use would be 30.2 acres rather than 31.4 acres.

^d Approximately 54 acres of publicly owned (i.e., HCCRA) railroad right-of-way within the Kenilworth Corridor and Bass Lake Spur will be used for public transportation purposes under the Project. Because this right-of-way is publicly owned and reserved for light rail use, it is not considered a direct change in land use and is not included in the table above.

Note: Area converted to public use is based on estimated property acquisitions.

Sources: MnDOT (2015) and Hennepin County Property Tax Information Search (December 2014).

3.1.3.2 Long-term Indirect Impacts on Land Use

While development and redevelopment in the land use study area is regulated by the affected local jurisdictions and is driven by regional and local economic conditions, light rail lines can advance the timing and increase the intensity of development, within the limits allowed by local comprehensive plans, particularly in areas surrounding proposed station. To fully leverage this development potential and to support local land use goals, Hennepin County, in partnership with the Cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, Edina and Minneapolis, undertook a station area planning effort. The resulting *Southwest Corridor Investment Framework* (Hennepin County, 2013)⁸ identifies short- and long- term infrastructure needs and land use plans for the Project station areas.

These station area plans are intended to help coordinate the Project design with the plans and decisions of local jurisdictions and adjacent property owners. These plans are part of an ongoing process that will continue through the Engineering phase and into construction and operation. The station area planning process has featured public workshops and meetings designed to help identify local area goals and the potential for redevelopment near proposed stations. As the Project continues toward construction, similar outreach and community involvement effort is anticipated. The Council recognizes that local governments control the decisions about land use, including zoning and specific development approvals.

Because the proposed Hopkins OMF would be used to perform light maintenance on light rail vehicles and is not a light rail station, the OMF is not anticipated to attract transit-oriented development nor would it influence growth patterns and neighborhood characteristics on adjacent land. However, portions of the proposed OMF site are within the area of potential land use influence of the proposed Shady Oak Station. As

⁸ <http://www.swlrtccommunityworks.org/beyond-rails/planning-information/investment-framework>

such, the Hopkins OMF would proportionately reduce the overall size of the area that could be influenced by the proposed station for more intense development and redevelopment. Because the proposed Hopkins OMF and the uses that would occur within it are compatible with existing adjacent land uses, it would not limit future development of adjacent parcels, which would remain as industrial uses.

The potential for increased development or redevelopment around proposed light rail stations is based on the *Southwest Corridor Investment Framework* (Hennepin County, 2013). Because future potential developments would require the actions of others and are influenced by market forces, they are considered potential indirect impacts to land use and not necessarily probable. See Exhibits 3.1-1 and 3.1-2 for an illustration of the proposed light rail station locations. Additional development or redevelopment is anticipated in all Project light rail station areas, except the 21st Street Station, which is currently fully developed with existing residential uses. All other proposed light rail stations are expected to experience additional mixed-use development that would be supportive of and compatible with light rail. The *Southwest Corridor Investment Framework* anticipates future changes in land use policies and zoning that would support opportunities for redevelopment and transit-oriented development, emphasizing a pedestrian-friendly, mixed-use environment with a multimodal transit network. Proposed developments, while subject to market forces, are already planned to be constructed close to proposed light rail stations. Joint development scenarios are discussed further in Chapter 10.

The anticipated development and density surrounding the Project station areas would promote employment by creating new permanent jobs and supporting access to employment opportunities. Commercial, office, and industrial uses throughout the land use study area would benefit from this improved transit access, as employers in the land use study area would be able to draw from a larger pool of potential employees. Businesses also may be influenced by transit service when selecting new sites, resulting in increased intensity of these land uses.

The expected increase in development density around light rail stations resulting from the construction of the Project is consistent with regional and local plans. These plans acknowledge the value of transit in supporting efficient land use development and the value of transit-oriented development around light rail stations.

3.1.3.3 Short-term Impacts on Land Use

Short-term land use impacts resulting from the Project could include temporary changes to property access during construction or temporary conversion of land to a transportation use for construction staging and other construction activities throughout all or part of the construction period. Refer to Sections 3.4, 3.7, 3.12, and 4.2 for a discussion on short-term impacts related to acquisitions and displacements, visual quality, noise, and roadways and traffic, respectively.

Temporary occupancies of parcels will include the use of construction easements or intergovernmental agreements and will not change existing land uses in the long term. Based on the Project's preliminary engineering plans (see Appendix E), temporary easements will be acquired on approximately 134 acres effecting approximately 178 parcels of land including those with industrial, commercial, railroad, residential, and public land uses. These construction easements will be temporary and the expiration of the easements will be specified within the executed easements. Prior to the expiration of the easement, the areas within the easements will be returned to preconstruction conditions or with changes, as specified in the executed easements.

3.1.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term land use impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Sections 3.1.3.1, 3.1.3.2, and 3.1.3.3 for additional information on the identified land use impacts and avoidance measures).

3.1.4.1 Long-term Mitigation Measures

Mitigation is not warranted for long-term land use impacts because there will be no long-term adverse impacts. The potential land use changes resulting from implementation of the Project, including intensification of land uses near proposed light rail stations, will be consistent with existing plans and policies. While the Project will result in changes to the existing use of particular parcels of land, those modifications will not change the overall land use characteristics of the land use study area and will not result in any adverse impacts to land use.

3.1.4.2 Short-term Mitigation Measures

Impact. Short-term land use impacts resulting from the Project could include temporary changes to property access during construction or temporary conversion of land to a transportation use for construction staging and other construction activities (i.e., noise and dust impacts) throughout all or part of the construction period.

Mitigation. Specific mitigation measures for short-term impacts to land use related to temporary construction easements and other construction activities will be identified in the Construction Mitigation Plan and Construction Communication Plan which will be implemented by the Council prior to and during construction. The purpose of the Construction Communication Plan is to prepare project-area residents, businesses, and commuters for construction; listen to their concerns; and develop plans to minimize harmful or disruptive effects. Specific mitigation measures included in the Construction Communication Plan will be site specific and may include:

- Issue construction updates and post them on the Project website
- Provide advance notice of roadway closures, driveway closures, and utility shutoffs
- Conduct public meetings
- Establish a 24-hour construction hotline
- Prepare materials with applicable construction information
- Address property access issues
- Assign staff to serve as liaisons between the public and contractors during construction

In addition, the Council will develop and implement a construction staging plan (staging plan), which will be reviewed with the appropriate jurisdictions and railroads, and the contractor will be required to secure the necessary permits and follow the staging plan, unless otherwise approved. Components of a staging plan include traffic management plans and a detailed construction timeline.

3.2 Economic Activity

This section describes the potential long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on economic activity (see Section 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis; an assessment of the existing environment; a description of the anticipated impacts related to economic activity; and a description of mitigation measures to implement with the Project.

3.2.1 Regulatory Context and Methodology

Two geographical study areas were used for the economic activity analysis:

- 1) The ***economic activity study area*** generally extends one-half-mile on either side of the centerline of the proposed light rail alignment and includes a one-half-mile radius around the center point of the proposed Hopkins OMF and light-rail stations. The *economic activity study area* is used for the description of the affected environment.

- 2) The ***economic trends study areas*** include the Twin Cities Metropolitan Area⁹ and the Minneapolis-St. Paul-Bloomington, MN-WI Metropolitan Statistical Area (MSA).¹⁰ The Twin Cities Metropolitan Area is used for the analysis of employment and population trends while the MSA is used for the analysis of long-term (operation) and short-term (construction) effects of the Project on the local economy in the form of employment, earnings and economic output.

Long-term environmental consequences were analyzed in the context of operational changes to the transit system and freight rail operations, as well as changes to property ownership under the Project. Short-term impacts were analyzed in the context of temporary activities related to the construction of the Project.

Impacts evaluated include the following:

- **Employment Effects (i.e., employment, earnings, and economic output) of Operating and Capital and Expenditures.** Regional Input-Output Modeling System (RIMS) multipliers¹¹ developed by the Bureau of Economic Analysis (USBEA) were utilized to estimate the operation and construction-related impacts for the metropolitan region. The metropolitan region is the smallest geographic area for which the multipliers are available. The multipliers were applied to the portion of the operation and construction and maintenance spending that would otherwise not have been present in the local economy to estimate the economic effects of the Project, which is termed *new money*. *New money* refers to either state or federal dollars that would otherwise not be present in the local economy except for the construction of the Project. Other funding sources that would likely enter the local or regional economy through other means are not included in the analysis. For instance, if state funding was not used on this particular project, the dollars would likely enter the local, regional or state economy via another state-sponsored project, providing benefits related with construction expenditures. Thus, money that would otherwise be spent locally should be excluded from the analysis. The RIMS II multipliers are only applied to *new* construction dollars from the Federal Transit Administration (FTA) and designated state funds that are brought to the regional economy by the Project.

In addition, only project expenditures that are likely to occur within the Minneapolis-St. Paul-Bloomington MSA are included in the regional impact analysis. For this analysis, it is anticipated that construction costs and professional services expenditures would largely occur within the region. It is also expected that expenditures associated with the manufacturing of transit vehicles will occur outside the region and therefore they are excluded. Right-of-way costs were also excluded as they represent the value of the land and not the labor associated with the transaction. Legal services, real estate costs, and relocation services are included in the professional services cost category. Thus, it is anticipated that no local labor will be used to produce the transit vehicles nor involved in the right-of-way costs, the RIMS II multipliers were not applied to capital expenditures related to vehicle and right-of-way spending and no local impact is expected to be realized as a result of these expenditures.

In addition, the short and long-term impacts of the Project were analyzed using the Council's REMI PI regional economic model.¹² The REMI PI model utilizes computable general equilibrium and new economic geography techniques to project forward time-series of economic and demographic outcomes.

⁹ The Twin Cities Metropolitan Area covers Minneapolis and St. Paul and their suburbs. The seven counties included in the Twin Cities Metropolitan Area include Hennepin (the Project lies completely within Hennepin County), Ramsey, Anoka, Washington, Carver, Scott, and Dakota.

¹⁰ Minneapolis-St. Paul-Bloomington, MN-WI Metropolitan Statistical Area includes the following counties in Minnesota and Wisconsin: Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Le Sueur, Mille Lacs, Ramsey, Scott, Sherburne, Sibley, Washington, Wright, Pierce (WI), and St. Croix (WI). <https://www.bea.gov/regional/docs/msalist.cfm#M>.

¹¹ RIMS multipliers provide a way to estimate the total impact that an initial change in economic activity has on an economy. RIMS multipliers are used to study how one industry's production affects the production of other industries in an economy. They are used to estimate how much additional production is created for every initial increase in production and how many additional jobs are created for every new job that is created. See the USBEA web site for additional information (<http://www.bea.gov/regional/rims/index.cfm>).

¹² Regional Economic Models Inc., Policy Insights (REMI PI) is an economic analysis modeling software package.

The REMI PI projections are informed by data on the region's industry mix, costs and productivity, and analysis of regional competitiveness within the national economy. Employment, migration and population outcomes directly flow from projected economic performance. The REMI PI model was run to supplement the economic impacts analysis. Results of the REMI PI analysis are discussed qualitatively as a relative comparison to the analysis conducted using the RIMS II multipliers, which was the primary economic impacts modeled considered for the Project.

- **Property Tax Revenues.** Anticipated private property acquisitions by the Council (see Section 3.4) were used to estimate the assessed value of property to be acquired for the Project. The most current annual city property tax assessment for a particular parcel was used to estimate the amount of city property tax revenue that the Project may initially eliminate. These effects are termed *direct property tax effects*. Direct property tax effects are a general measure of the fiscal effect to jurisdictions in terms of projected changes to property tax revenue due to the Project. All direct property tax effects for a particular city were then summed and compared to the total property tax revenues for that city (as reported in its most current adopted budget) to gauge the scale of the anticipated impact.
- **Economic Impacts on Freight Rail Owners and Operators.** The potential for long-term economic impacts associated with changes to the freight rail transportation system related to modifications to existing tracks and connections are discussed qualitatively. Also discussed are the short-term activities that will be related to the construction of the proposed light rail line and related facilities. These short-term construction activities have the potential to effect freight rail operations in select locations due to such things as temporary intermittent freight train stoppage periods to provide for light rail-related construction activities.
- **Development Impacts and Impacts to Businesses.** The proposed light rail stations under the Project have the potential to support development or redevelopment that will likely change the existing land use patterns within approximately one-half mile of station areas under current plans and policies. The stations may also have adverse impacts that can include increased congestion and reduced parking supply for business patrons. The discussion of development impacts is qualitative in nature.

3.2.2 Affected Environment

This section describes the existing economic activities and conditions within the study area for the economic activities analysis. This section includes a summary of the general employment trends within the region, an overview of existing property tax revenues for each of the affected cities (i.e., Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis), and a summary of the existing development in the areas surrounding the proposed light rail stations.

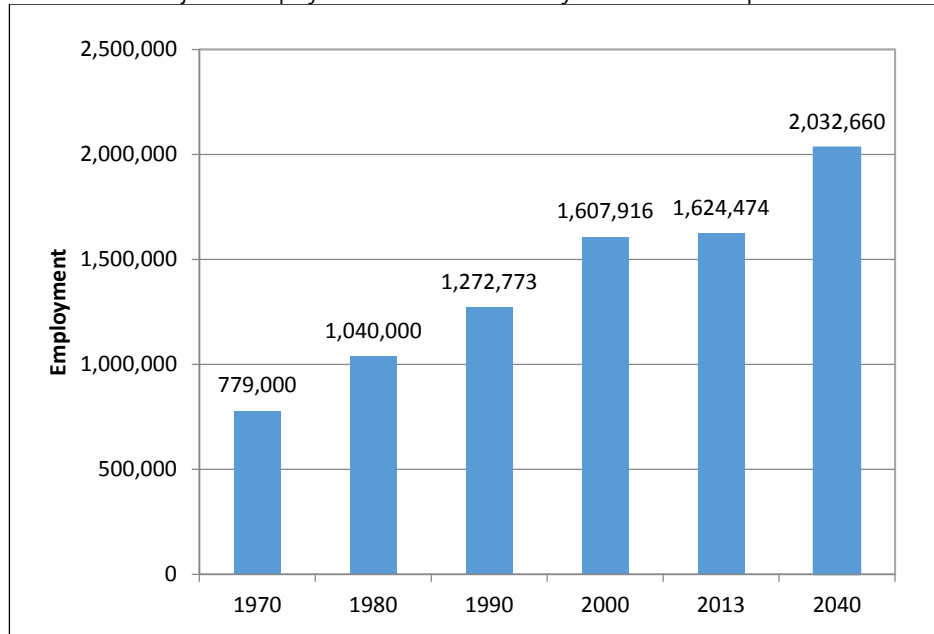
3.2.2.1 Employment Trends

This section evaluates employment trends in the seven-county Twin Cities Metropolitan Area. This region is characterized by current and projected job growth in industries that require efficient transportation of goods, services, and employees to and from their places of business. Between 1970 and 2013, total employment in the region increased from approximately 780,000 jobs to over 1.6 million jobs, respectively. Exhibit 3.2-1 presents historical and projected employment in the region, from 1970 to 2040. The Twin Cities Metropolitan Area is the dominant economic center for Minnesota and western Wisconsin and is the home to a number of large corporate employers: Target, Best Buy, 3M, CHS, US Bancorp, Medtronic, and General Mills (Greater MSP, 2015). Major employers located along the proposed alignment include United Health Group, Supervalu, and Cargill. Although the area experienced steady job growth from 1970 to 2000, the national recession slowed job growth between 2000 and 2013. Employment in the seven-county region and the MSA grew at average annual rates of 0.1 percent and 0.3 percent, respectively (Bureau of Labor Statistics, 2015).

As the economy recovers from the recession, future job growth is anticipated in the region. By 2040, businesses in the seven-county area are projected to employ over 2.0 million individuals; an addition of over 400,000 jobs. Communities in the urban center and suburban areas are expected to draw the region's employment growth. The five cities located on the alignment are projected to add over 115,000 jobs.

EXHIBIT 3.2-1

Historical and Projected Employment in the Seven-County Twin Cities Metropolitan Area



Source: Metropolitan Council, 2015a.

Minneapolis is expected to add nearly 69,000 jobs. Eden Prairie and Minnetonka are forecast to add approximately 18,000 and 19,000 jobs, respectively. Hopkins and St. Louis Park are anticipated to employ an additional 11,000 people combined by 2040 (Metropolitan Council, 2015a).

Exhibit 3.2-2 shows annual average unemployment data from the Minnesota Department of Employment and Economic Development for the MSA, the State of Minnesota, and the United States from 1990 through 2014. While the unemployment trends of the MSA and the state generally mirror the trends of the national unemployment rate, both the MSA and the State of Minnesota have a lower unemployment rate than the nation as a whole. The economic growth in the late 1990s helped reduce the unemployment rate in both the MSA and the state to levels unseen in the last 25 years. In 2009, unemployment rates in the MSA, the State of Minnesota, and the United States increased because of the recession of the regional and national economy. The federal, state, and regional average annual unemployment rates have declined from a high in 2009 (i.e., state and regional) and 2010 (i.e., federal) through 2014.

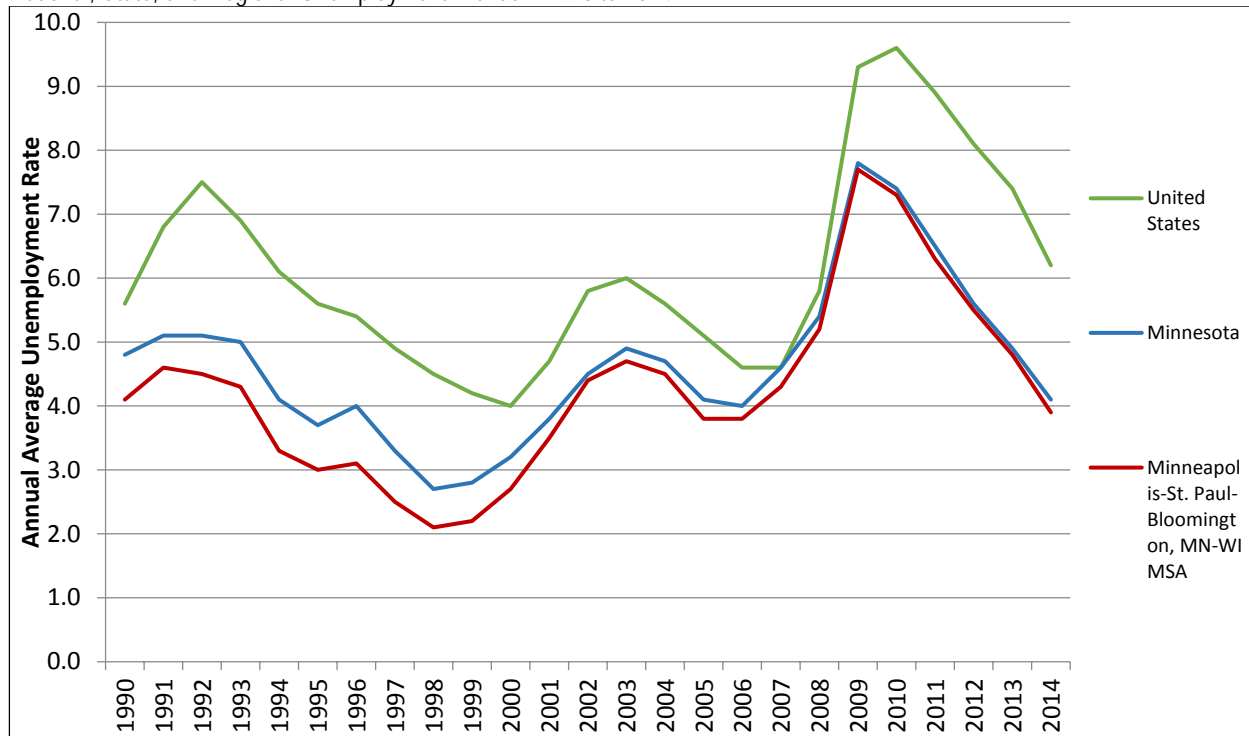
3.2.2.2 Property Tax Revenues

Property tax revenues are primarily divided among the counties, cities, and local school districts. While the potential property acquisitions associated with the proposed project will likely negatively impact total property tax revenues, they represent a relatively small proportion of the overall regional tax base, and will have a negligible impact on county and school district tax revenues. Therefore, for the purpose of this analysis, the impacts on property tax revenues associated with property acquisitions will include only an evaluation of the five cities where acquisitions will occur.

Exhibit 3.2-3 shows the percent of total general fund revenues by source for Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis. In summary, Eden Prairie, Minnetonka, Hopkins, and St. Louis Park rely extensively on property tax collections as a revenue source for their respective general funds. Property tax revenues account for approximately 69 percent to 82 percent of total general fund revenues for these communities. The City of Minneapolis has a broader range of funding sources that includes sales and other taxes, intergovernmental revenues, and other revenue sources, and therefore property taxes represent a smaller proportion of the city's total general fund (i.e., approximately 33 percent).

EXHIBIT 3.2-2

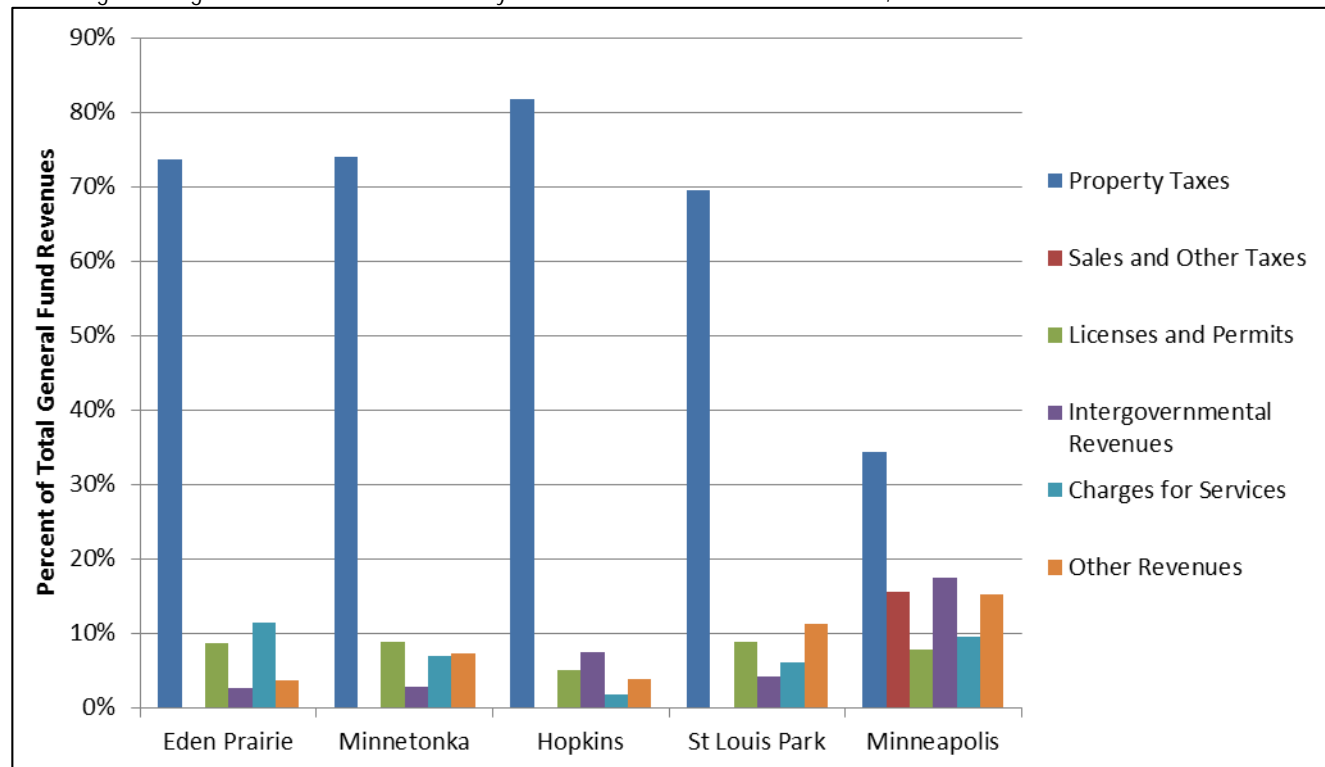
National, State, and Regional Unemployment Trends – 1990 to 2014



Source: Minnesota Department of Employment and Economic Development, 2014b.

EXHIBIT 3.2-3

Percentage of Budgeted General Fund Revenue by Source for Effected Local Jurisdictions, 2015



Sources: Eden Prairie FY 2015 Budget, Minnetonka FY 2015 Budget, Hopkins FY 2015 Budget, St. Louis Park FY 2015 Budget, Minneapolis FY 2015 Budget.

3.2.2.3 Existing Businesses and Development

Activities that contribute to the local and regional economies are directly related to existing land uses which contribute to employment, earnings, and economic output, as well as local property tax revenue. Table 3.2-1 summarizes the existing land uses and activities that contribute to the local and regional economies near the proposed light rail stations. Refer to Section 3.1.2.1 for more information regarding existing and planned land use around the station areas.

3.2.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts on economic activity from the Project. The evaluation of long-term direct economic impacts includes an assessment of the potential for increased regional employment and income, the potential impact on property tax revenues to local jurisdictions, impacts related to the acquisition and disposition of land uses, and potential economic impacts to freight rail owners and operators.

The evaluation of long-term indirect economic impacts includes an assessment of the potential changes in development patterns in the vicinity of light rail stations and the associated effect on economic activity and property values.

The evaluation of short-term economic impacts includes an assessment of potential short-term changes to regional employment and income, short-term changes to property tax revenues, potential economic effects on existing residents and businesses related to construction activities, and potential economic effects on freight rail owners and operators.

3.2.3.1 Long-term Direct Economic Impacts

This section includes a summary of the potential long-term direct impacts of the Project on economic activity, including regional employment and income, potential impacts on property tax revenues to local jurisdictions, potential economic impacts to freight rail owners and operators, potential impacts to local businesses, and potential development/redevelopment of land acquired along the proposed alignment.

Regional Employment

The Project will create long-term jobs and additional earnings as a result of Operations and Maintenance (O&M) expenditures. The Project is expected to add a total of 160 full-time equivalent jobs associated with operations of facilities and light rail vehicles (see the *Southwest LRT Operation and Maintenance Facility Basis of Design Report*, listed in Appendix C; instructions for accessing this report are also in Appendix C). The Project will also increase O&M by \$39.5 million (2016\$) annually over the No Build alternative. The expansion of transit service associated with the Project creates an expansion of economic activity in the Minneapolis-St. Paul-Bloomington MSA, thus generating long-term recurring net economic impacts.

Table 3.2-2 presents the estimated net change in local earnings and jobs generated by the Project and describes anticipated payroll expansion (Net Earnings Impacts) and jobs resulting from operating the Project. The direct-effect multipliers applied for the analysis are for the industry "Transit and Ground Passenger Transportation" (USBEA, 2010). Direct-effect employment multipliers are applied to the wage component of O&M costs. The transit earnings are derived by multiplying the incremental O&M cost over the No-Build Alternative by the transit on-site labor percentage (76 percent) (Council, 2015). The O&M labor component is the estimated percentage of total LRT O&M costs related to labor. The annual increase in household earnings will result in an increase in positive economic activity to the local economy, both through direct hiring to fill transit jobs and indirectly as these transit workers spend their earnings, thus creating additional consumer demand and jobs to meet that demand.

For the Minneapolis-St. Paul-Bloomington MSA, the effect of local O&M spending for the Project will result in an estimated \$34.5million in local annual wages and salaries, compared to the No Build Alternative (in 2040). The local wages and salaries will support 172 jobs in the local economy.

TABLE 3.2-1
Summary of Existing Economic Activity in Proposed Light Rail Station Areas

Station Area	Existing Economic Activity
SouthWest Station	Includes retail, restaurant, office, multifamily residential, and a SouthWest Transit park-and-ride lot. Several restaurants serve the immediate station area. More retail, restaurant, and office uses are located to the east of the station area, near Eden Prairie Center and Hennepin County Technical College.
Eden Prairie Town Center Station	The predominant economic activity is auto-oriented retail, and restaurants. The Eden Prairie Center shopping mall is located approximately 0.5 mile east of the proposed station. Walmart and Costco stores also are located near the station area. Several other retail stores, shops, services, and restaurants also exist in the station area. In addition to retail uses, office, light industrial, and multifamily housing, exist in the station area. Emerson Process Management has more than 1,000 employees. Over 3,000 medical jobs within a 2-mile radius.
Golden Triangle Station	Primarily low-rise, low-density office, and light industrial. Starkey Labs, and CIGNA large employers located near the station.
City West Station	The Optum campus is a major employment center adjacent to the station. Other economic activity in the area includes a multifamily residential neighborhood to the south and a small commercial/retail area to the west, along Shady Oak Rd.
Opus Station	Large employment center with a mix of industrial, light industrial, and office uses. Nearby major employers include Opus, Optum, American Medical Systems, and Comcast.
Shady Oak Station	Consists almost entirely of older, low-rise industrial properties. The City of Hopkins Public Works Facility and Central Park are to the north of the station on Excelsior Blvd. Mainstreet and its mix of retail and housing uses is located approximately 0.5 mile to the north and could be accessed along 17th St.
Downtown Hopkins Station	A mix of retail, office, civic/institutional, residential, and light industrial. A block to the north of the station is the Hopkins historic commercial district, which is a mixed-use, retail/main street corridor. Major employers include Cargill, Hopkins Honda, and SuperValu.
Blake Station	The current mix of land uses includes industrial, light industrial, office, retail/commercial, institutional, and a variety of housing types and densities (e.g., single-family detached, single-family attached, and multifamily), including affordable housing options.
Louisiana Station	Many of the existing land uses are industrial and light industrial. Other land uses include institutional (e.g. Methodist Hospital), retail/commercial (e.g. Sam's Club), and residential (e.g. single-family detached and medium-density multifamily). The most significant existing land use anticipated to generate transit ridership is Methodist Hospital, which currently employs approximately 3,900 people.
Wooddale Station	In recent years, the area has seen redevelopment activity near the proposed station. Much of this redevelopment is medium- to high-density residential, located near the proposed station. Just to the east of State Hwy 100, land uses include a regional shopping center and light-industrial uses.
Beltline Station	Existing land uses include a significant amount of industrial, light industrial, and office uses along the south side of Hwy 25 and west of Beltline Blvd. Commercial and residential uses also exist in the station area. Located in the area are Nordic Ware, St. Louis Park municipal campus, the Park Nicollet Melrose Institute, and Excelsior & Grand shops and restaurants.
West Lake Station	A mix of residential types and densities, office, retail, and recreational land uses. Station area located near Calhoun Commons and Calhoun Village retail/commercial shops and restaurants, several office buildings, Lake Calhoun Executive Center, Lake Point Corp Center, and Fairview Uptown Clinic.
21st Street Station	Land uses are single-family residential and park land. Much of the area within the 0.5-mile radius around the station consists of Cedar Lake and Lake of the Isles.
Penn Station	Much of the existing land use is single-family residential. A small amount of commercial/light-industrial use is located just to the west of the station, along S Wayzata Blvd.
Van White Station	These properties include the City's vehicle impound lot and concrete-crushing facility located in the area. Several industrial uses are also located in the vicinity of the station. Several civic, cultural, and institutional (e.g., Dunwoody College of Technology) land uses, anticipated to generate transit ridership, exist in the area.
Royalston Station	Existing development is dominated by industrial and commercial uses. Significant land uses anticipated to generate transit ridership, located within walking distance from the station, include the Minneapolis Farmers Market, Target Field, Target Center, and International Market Square. The station will serve these destinations and local businesses, but also has the potential to serve the North Loop and Loring Park neighborhoods, which are approximately 1 mile from the proposed station.

Sources: *Southwest Corridor Investment Framework* (Hennepin County, 2013b); Southwest LRT Community Works—LRT Station Areas Existing Conditions (Hennepin County, 2014b).

TABLE 3.2-2

Annual Long-term Direct Earnings and Job Effect of Operations and Maintenance for the Project^a

Earning Impact	
Transit System Operating and Maintenance Costs over the No Build Alternative (millions)	\$39.5
Percent of O&M Cost attributed to Transit Wages ^b	76%
Transit Wages (millions)	\$30.0
Direct Effect Earning Multiplier ^c	\$1.1487
<i>Net Change in Local Earnings (millions)^f</i>	\$34.5
Employment Impact	
Additional Jobs over the No Build Alternative ^e	160
Direct Effect Jobs Multiplier ^f	1.0732
<i>Net Change in Local Jobs^g</i>	172

^a Based on the 2040 system-wide transit operating plan, 2016\$.^b Source: Council, 2015.^c Source: USBEA direct multiplier for "Transit and Ground Passenger Transportation."^d Equals *transit wages* multiplied by the *direct effect earning multiplier*. Source: USBEA, 2010.^e Source: *SWLRT Operation and Maintenance Facility Basis of Design Report*, 2013 (see Appendix C).^f Source: USBEA direct effect jobs multiplier for "Transit and Ground Passenger Transportation."^g Equals *additional jobs over the No Build Alternative* multiplied by the *direct effect jobs multiplier*.

Source: Council; USBEA RIMS II, American Public Transportation Association (2014).

The Council's REMI PI model was used to supplement the results of the RIMS II model. The REMI PI is a different type of modeling approach which can be used to understand the economic impacts resulting from changes in labor accessibility such as improved transit access or reduced roadway congestion. The results of the Council's REMI PI analysis show that the Project may result in additional positive economic impacts beyond those estimated by the RIMS II model. Specifically, the REMI-PI model estimated greater gains in employment and economic output that are a result of improved labor accessibility for transit-dependent populations. If the Project results in improved livability in the region that attracts additional population and economic activity, additional economic benefits may be realized.

Note that the overall economic impact associated with the increased income will depend on the source of funding for these O&M expenses. Although funding for these O&M expenses would likely originate from local sources, they represent spending that would not take place except for the operation of the Project. If federal funds are received for future maintenance activities, they could generate additional net economic effects to the regional economy through increased employment and earnings.

Property Tax Revenue

Property taxes represent one of the major sources of revenues for county and city government. The Project will affect this source of funding during construction and operation. The economic effect of acquiring privately owned parcels would be the permanent removal of these parcels (full or partial) from the tax base of the affected cities, thus potentially lowering property tax collections.

The Project will result in the acquisition of public and privately owned property for additional right-of-way. The acquisition of publicly owned property will not affect property tax collections, because these parcels are exempt from paying property taxes. The economic effect of acquiring the privately owned parcels will be the permanent removal of these parcels (full or partial) from the tax base of the affected county, cities, and school district, thus potentially lowering property tax collections. Refer to Section 3.4.3.1 for a discussion on privately and publicly owned parcels that will be fully or partially acquired under the Project. In summary, a total of approximately 200 parcels have been identified as having total or partial permanent acquisition. Of these, approximately 50 parcels are owned by public agencies, and thus generate no property tax revenues. Table 3.2-3 summarizes the property tax impact of the land converted from privately owned to publicly owned land. The estimated tax effects for the Project will be between approximately 0.1 and 0.4 percent of

the general fund property tax collections in 2015 for the cities of Eden Prairie, Minnetonka, and St. Louis Park, and less than 0.1 percent for the City of Minneapolis. The estimate of the property tax impact for the City of Hopkins is approximately 1.9 percent of total property tax revenues, which is higher than the other communities based in part on the number of stations and the placement of the OMF in the City of Hopkins.

After construction activities are complete, the Council may dispose of excess property, consistent with state and federal laws and Council policy. The initial property tax impacts are presented in Table 3.2-3.

TABLE 3.2-3

Estimated Effects of Right-of-Way Property Acquisition

Municipality	General Fund Property Tax Revenues	Total Assessed Value of Properties located in Project ROW	Estimated Property Tax Impact	% of General Fund Property Tax Revenues Impact
Eden Prairie	\$30,570,531	\$220,668,500	\$122,000	-0.4%
Minnetonka	\$22,725,045	\$71,885,200	\$34,000	-0.1%
Hopkins	\$9,307,729	\$78,818,400	\$179,000	-1.9%
St. Louis Park	\$22,364,509	\$8,430,000	\$26,000	-0.1%
Minneapolis	\$156,478,620	\$66,440,600	\$8,000	-0.0%
Total	\$241,446,434	\$446,242,700	\$369,000	-0.2%

ROW = right-of-way.

Source: Council, 2015.

Existing Business and Development/Redevelopment Effects

The Project may affect local businesses as local traffic patterns are changed and the number of available off-street and on-street parking spots in the corridor is reduced, while pedestrian and vehicular traffic around stations and park-and-ride lots increase. Refer to Section 4.3 for more information on parking impacts. While there is a potential for loss of business revenue due to changes in vehicular patterns and parking, the net revenue loss may be minimal due to greater pedestrian presence and vehicular traffic associated with access to the stations.

The Project will acquire approximately 126 acres of land, affecting 143 land parcels and will convert the land to public use. This land will therefore be removed from the inventory of available land for potential development/redevelopment within the study area. See Section 3.2.3.2 for discussion on how the Project will indirectly affect potential development or redevelopment of properties in the corridor.

Freight Rail Owners and Operators

Beginning in the City of Hopkins, and continuing to its terminus at the existing Target Field Station in Minneapolis, portions of the proposed light rail alignment will be located within or adjacent to a combination of three active existing freight rail corridors (refer to Exhibit 4.4-1 in Section 4.4): the Bass Lake Spur; the Kenilworth Corridor; and the Wayzata Subdivision. A fourth freight rail line, the Minneapolis, Northfield, and Southern Railway (MN&S) Spur, intersects the Bass Lake Spur within the study area. Refer to Section 4.4.3.1 for a more detailed description of each of the freight rail corridors within the study area.

As described in Section 4.4.4.1, the Project will include freight rail modifications, which generally involve reconstruction of existing freight rail tracks (Bass Lake Spur, Kenilworth Corridor, and Wayzata Subdivision), removal/replacement of an existing switching wye (Bass Lake Spur and MN&S Spur), and removal of freight rail siding tracks (Bass Lake Spur) (refer to Appendix E for preliminary engineering plans showing these modifications). Table 3.2-4 includes an evaluation of potential economic effect on freight rail owners and operators, by rail corridor.

TABLE 3.2-4
Economic Effects on Freight Rail Owners/Operators

Freight Rail Corridor	Freight Rail Modification	Economic Effect on Freight Rail Owners/Operators
Wayzata Subdivision	Freight rail reconstruction	No effect: Geometry of the freight rail alignment will change; no changes to freight rail operations; no change in access to existing freight rail markets and customers; no access to new freight rail markets not currently served.
Kenilworth Corridor	Freight rail reconstruction	No effect: Geometry of the freight rail alignment will change; no changes to freight rail operations; no change in access to existing freight rail markets and customers; no access to new freight rail markets not currently served.
Bass Lake Spur	Freight rail/light rail swap	No effect: Owner (CP) will be compensated for the acquisition of the Bass Lake Spur ^a ; long-term freight rail operations will not be affected.
	Southerly Connector/Skunk Hollow switching wye	No effect: Geometry of the freight rail alignment will change; no changes to freight rail operations; no change in access to existing freight rail markets and customers; no access to new freight rail markets not currently served.
	Siding track removal	No effect: The removal of the siding tracks will be addressed with CP (owner) and TC&W (operator) under the purchase agreement for the Bass Lake Spur which will include compensation for the removal of the siding tracks. ^a

^a The purchase agreement between the Council and CP Railway for the acquisition of the Bass Lake Spur will be negotiated and executed after the publication of this Final EIS.

Source: Council, 2015.

CP = Canadian Pacific; TC&W = Twin Cities and Western Railway Company

3.2.3.2 Long-term Indirect Economic Impacts

The Project is likely to have the long-term indirect effect of increased development and redevelopment in the areas surrounding proposed light rail stations¹³

In the long-term, overall accessibility improvements from transit service, including reduced traffic congestion, improve workforce access and retail access in an extended area, resulting in greater economic activity in an extended area. These benefits are not captured in the economic impact model used, and have not been quantitatively estimated for this project.

Table 3.2-1 summarizes the existing land use and potential for development within each of the proposed light rail station areas, based on the *Southwest Corridor Investment Framework* (Hennepin County, 2013b). However, because the future potential developments would require the actions of others and are influenced by market forces, they are understood to be indirect impacts to land use. Development that is consistent with local land use plans and policies would not result in adverse long-term impacts.

Transit investments have proven to yield net positive effects on property values (Diaz, 1999). Research conducted by the Center for Transportation Studies at the University of Minnesota (Goetz et al., 2010 and Ko and Cao, 2010) on the impacts the METRO Blue Line (Hiawatha Line LRT) has had on residential, commercial, and industrial properties suggests that light rail has an overall positive effect on property values. Proximity to station areas was a major factor in the positive effect on residential and multifamily properties. The overall strength of the economy, local government policies, and land availability, are also critical factors in determining the value of the property.¹⁴

¹³ Research on the impacts associated with light rail systems indicates that light rail is one of many factors that can influence development. In a study titled *Public Transportation: Multiple Factors Influence Extent of Transit-Oriented Development* (Wise, 2014), the U.S. Government Accountability Office (GAO) reviewed six federally funded transit projects and found a wide range in the amount of transit oriented development (TOD) near transit stations since transit operations began. The findings of the GAO study are consistent with a study conducted by the Center for Transit-Oriented Development (2011) that reviewed the development patterns along three light rail transit projects in the United States.

¹⁴ The impact to residential and commercial property values of light rail projects has been studied in other markets throughout the nation. While impacts to property values have varied depending on the community, residential and

Light rail also has the potential to cause environmental impacts (“nuisance effects”) that could reduce the value of an area for some existing or planned uses and/or lower the revenue of local businesses over the long term. These potential nuisance effects include disruptive noise levels; significant visual impacts; and significant reductions in vehicular access and parking. The rate and timing of such impacts would depend on the location of the business relative to the new station, changes in business activity during construction and operation of the system, business visibility, and local land use plans and development standards. For the Project, the potential nuisance effects are expected to be minimal. Mitigation measures for visual quality, noise, and vibration, and parking impacts are discussed in Sections 3.7, 3.12, 3.13, 4.3 respectively.

The Project is expected to indirectly lead to new development and/or redevelopment of land surrounding some of the proposed light rail stations, which could have the effect of increasing property tax revenues for the affected local jurisdictions. While development is regulated by the affected jurisdictions and is driven by regional and local economic conditions, light rail lines can advance the timing and increase the intensity of development, within the limits allowed by local zoning, particularly surrounding proposed station areas. To fully leverage this development potential and to support local land use goals, Hennepin County, in partnership with the Cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis, undertook a station area planning effort. The resulting Southwest Corridor Investment Framework (Hennepin County, 2013b) identifies short- and long- term infrastructure needs and land use plans for the station areas included in the Project, with the intent of supporting the local and regional vision for increased transit oriented development. Refer to Section 3.1.3.2 for more information on the potential for development/redevelopment in the areas surrounding proposed light rail stations.

To the extent the Project leads to new private development around light rail stations, new jobs could be created in the region as employees gain easier access to businesses, residential housing units, and other facilities. The creation of these jobs would provide a net benefit to the local economy.

3.2.3.3 Short-term Economic Impacts

Employment

In order to estimate the broader regional economic effects of the capital spending associated with the Project, the USBEA and RIMS multipliers for the Minneapolis-St. Paul-Bloomington, MN-WI MSA were used. The estimated capital expenditures for construction of the Project are presented in Section 7.1, Table 7.1-1. Total costs are estimated at \$1.794 billion and are presented in year-of-expenditure dollars.

Construction of the Project will represent a substantial capital investment in the regional economy that will increase employment, earnings, and economic output during the short-term construction period. However, the degree to which the construction of the Project will provide an economic stimulus to the region depends on the source of project funding. Only those economic affects that are attributable to funds that are made available for this specific project (*new money*) should be considered as project related. Proposed funding sources for the Project are presented in Table 3.2-5. Currently, federal, state, and local sources have been identified. Approximately 59 percent of the funding is considered *new money*.

In order to estimate the regional impacts associated with the Project, final demand multipliers for the construction and professional services industry were applied to the amount of new funding that will be used for capital expenditures. The results of this analysis, as summarized in Table 3.2-6, are expressed as new short-term jobs that will span the duration of construction.

commercial properties located closer to light rail stations experienced greater increases in property values. In a report for the American Public Transportation Association entitled “Economic Impact of Public Transportation Investment” (2009), a number of studies in other cities were summarized and generally concluded a positive effect to property values.

TABLE 3.2-5

Summary of Proposed Capital Funding Sources (New or Existing) for the Project^a

Source	Contribution (millions)	Share	New or Existing Funding
Federal Transit Administration ^b	\$897.0	50.0%	New
State of Minnesota	\$165.0	9.2%	New
County Transit Improvement Board	\$496.0	27.7%	Existing
Hennepin County Regional Railroad Authority	\$165.0	9.2%	Existing
Other Local Funding	\$70.0	3.9%	Existing
Total	\$1,793.0	100.00%	
Percentage New		59.2%	

^a Does not include LRCIs.^b The FTA's share is proposed by the Project and does not constitute a commitment by the federal government.

Source: Council, August 2015g New Starts Report to FTA.

TABLE 3.2-6

Summary of Short-term Economic Impacts Resulting from the Project

	Construction	Vehicles	ROW	Professional Services	Total
Construction Expenditure Summary (YOE\$)	\$1,124,402,000	\$123,490,000	\$211,785,000	\$333,190,000	\$1,793,867,000
Construction Expenditure affecting the Regional Economy ^{a,b}	\$1,125,400,000	\$0	\$0	\$333,190,000	\$1,458,590,000
Percent of <i>New Money</i> ^c	59.2%	59.2%	59.2%	59.2%	
New Capital Expenditure within Region	\$666,578,000	\$0	\$0	\$197,350,000	\$863,928,000
Final-demand multiplier:					
Output	\$1.5135	NA	NA	\$1.3367	
Earnings	\$0.5397	NA	NA	\$0.5826	
Jobs per \$1 million spent	12.4824	NA	NA	11.472	
Short-term Regional Impacts to:					
Output	\$1,008,866,000	NA	NA	\$263,798,000	\$1,272,664,000
Earnings	\$359,752,000	NA	NA	\$114,976,000	\$474,728,000
Employment (jobs) ^c	8,300	NA	NA	2,300	10,600

^a Light rail vehicle costs are not included, as vehicles will likely be purchased outside the region; right-of-way costs are not included, as right-of-way costs are for land only and the acquisition of land does not generate jobs or income; finance and real estate costs are included in Professional Services.^b The RIMS II multipliers account for the fact that local industries will likely purchase some supplies from outside the region.^c Percent of *new money* from Table 3.2-3^d Compared to the No-Build Alternative; one job is defined as a job for one person for one year. For example, a job for one person that lasts three years would equate to three person-year jobs.

Source: Council, August 2015g New Starts Report to FTA; USBEA, RIMS II Multipliers (2010).

The short-term effect of construction spending associated with the Project will result in an estimated \$1.3 billion in overall economic activity (year of expenditure dollars) for the Minneapolis-St. Paul-Bloomington MSA over the construction period. It is estimated that construction-related spending will provide regional economic benefits by generating approximately \$475 million in additional wages and salaries for households and by creating approximately 10,600 person-year jobs for all industries in the Minneapolis-St. Paul-Bloomington MSA during the construction phase of the Project. A person-year job is

defined as a job for one person for one year. If a job employs a single person for three years, it would equal three person-year jobs.

The Council's REMI PI model was used to supplement the results of the RIMS II model. The REMI PI is a different type of modeling approach which can be used to understand the economic impacts resulting from changes in labor accessibility such as improved transit access or reduced roadway congestion. The results of the Council's REMI PI analysis show that the Project may result in additional positive economic impacts beyond those estimated by the RIMS II model. The REMI-Pi model projects greater levels of employment, particularly in the construction industry, income, and overall economic output.

Additional projects funded by local jurisdictions may also be completed during the construction of the Project. These Locally Requested Capital Investments (LRCIs) will total approximately \$20 million. The LRCI projects include building trails, enhancing lighting, providing aesthetic upgrades, and making roadway improvements around the Project. Because the LRCI projects will be funded locally and do not represent a source of external, or "new", money, they were excluded from the RIMS II modeling. However, the LRCI projects are expected to enhance the aesthetics of the stations, provide improved access to the Project, and provide livability benefits.

Project construction may result in lost revenues for businesses, affect the quality of life of residences on or near affected properties, and result in temporary property value reductions. Those effects would be caused by construction-related activities, such as the following:

- Temporary or permanent elimination of parking stalls
- Congestion, changes in access, and reduced visibility from the street (e.g., establishing a detour that requires customers to take longer or less familiar routes to a business, removing a left-hand turn lane into a shopping center, or eliminating the "street appeal" from a business that depends on drive-by or walk-up sales)
- Increased noise, dust, and perceived changes in visual quality (e.g., glare from nighttime construction lighting)

Retail and personal services businesses that depend on good access and an aesthetically pleasing experience for customers are most likely to experience short-term impacts during construction.

Property Tax Revenue

The Project will result in temporary occupancies of parcels through the use of construction easements or intergovernmental agreements. The construction easements or agreements will be temporary and are not expected to result in the displacement of businesses or residents. However, they could impact revenues for affected businesses. These temporary occupancies will not change existing land uses in the long term. Therefore, the Project is not expected to result in any substantial short-term changes to property tax revenues. Refer to Section 3.4.3.3 for more information on short-term acquisitions.

Existing Businesses Effects

The Project will result in short-term impacts to some existing businesses. Short-term impacts include potential increases in noise levels, dust, traffic congestion, visual changes, and increased difficulty accessing commercial and other uses, and some businesses may experience economic hardship during the construction period. Potential mitigation measures for visual quality, noise, vibration, and traffic impacts are discussed in Sections 3.7, 3.12, 3.13, and 4.2 respectively. In order to minimize short-term impacts to business, the Council has developed a Construction Communication Plan. The purpose of the Construction Communication Plan is to prepare project-area residents, businesses, and commuters for construction; listen to their concerns; and develop plans to minimize harmful or disruptive effects. Refer to Section 3.2.4 for more information on the Construction Communication Plan and mitigation measures for short-term impacts.

Freight Railway Owners and Operators

This section describes the potential short-term economic impacts associated with constructing the Project. Constructing the Project will have some effects on freight movements in the corridor that will be temporary

in nature. In general, the freight rail traffic may experience slower operations during construction, which will be managed with onsite flaggers paid for by the Project. There may be short periods of freight stoppage required to make some modifications to the freight rail track, expected to be less than eight to 18 hours in duration. These infrequent situations will be coordinated with and agreed upon by the affected operating railroads (CP and TC&W). Refer to Section 4.4 for a description of construction impacts on freight.

3.2.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term economic activity impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Sections 3.2.3.1, 3.2.3.2 and 3.2.3.3 for additional information on the identified economic activity impacts and avoidance measures).

3.2.4.1 Regional Employment

No mitigation measures are warranted for long-term or short-term impacts to regional employment because there will be no adverse impacts to regional employment.

3.2.4.2 Property Tax Revenue

A. Long-term Mitigation Measures

No mitigation measures will be implemented for long-term impacts to property tax revenue; however, the Council is pursuing a joint development opportunity at the proposed Beltline Station, which could increase property tax revenues, if implemented. Joint development involves a partnership with the affected cities and property owners, to develop/redevelop land adjacent to a proposed station, in an effort to promote TOD and in order to increase the collectible tax revenues of the affected parcels of land.

The potential for joint development to occur is dependent on reaching agreement with affected jurisdictions and approval by FTA, and joint development sites are not part of the Project as defined in Section 2.1.1. Refer to Chapter 10 for more information on joint development.

B. Short-term Mitigation Measures

No mitigation measures are warranted for short-term impacts to property tax revenue because there will be no adverse impacts to property tax revenues in the short-term.

3.2.4.3 Freight Rail Owners and Operators

A. Long-term Mitigation Measures

No mitigation measures are warranted for long-term economic impacts to freight rail owners and operators because there will be no adverse long-term impacts.

B. Short-term Mitigation Measures

Impact. The Project will result in slower freight rail operations during construction and short periods of freight stoppage required to make some modifications to the freight rail track, expected to be less than eight to 18 hours in duration. Refer to Section 4.4 for a description of construction impacts on freight

Mitigation. In order to mitigate short-term impacts to freight rail operations related to construction activities, the Council will develop and implement freight rail operation coordination plans. The purpose of this plan is to facilitate coordination between the Project and the affected freight railroads throughout the construction period to minimize impacts on freight owners and operators and to help ensure the Project does not create unreasonable constraints during construction of the Project. As part of this effort, Council staff will also work with affected freight rail owners and operators to provide provisions in the construction contract to identify how the contractor will interact with the railroads. Further, Council staff will work with affected freight rail owners and operators to sequence construction to minimize effects on freight movements and to identify optimal periods for closing the rail service and reducing speeds. Dates and times for all stoppages will be determined through coordination with the railroad owners and operators.

3.2.4.4 Existing Businesses and Development/Redevelopment Effects

A. Long-term Mitigation Measures

Impact. The Project will affect local businesses as local traffic patterns change and the number of available off-street and on-street parking spots in the corridor is reduced, which could result in a loss of overall parking for some businesses and a related loss in revenue.

Mitigation. When acquiring property from a property owner, the Council will pay damages if the value of the property is decreased in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act). Refer to Section 3.4.1 for additional information on the Uniform Act.

B. Short-term Mitigation Measures

Impact. The Project will result in short-term impacts to some existing businesses. Short-term impacts include potential increases in noise levels, dust, traffic congestion, visual changes, and increased difficulty accessing residential, commercial, and other uses, and some businesses may experience economic hardship during the construction period. Potential mitigations for visual quality, noise, vibration, and traffic are discussed in Sections 3.7, 3.12, 3.13, and 4.2 respectively.

Mitigation. Specific mitigation measures for short-term impacts businesses are identified in the Construction Mitigation Plan and Construction Communication Plan, which will be implemented by the Council prior to and during construction. The purpose of the Construction Communication Plan is to prepare project-area residents, businesses, and commuters for what to expect during construction, listen to their concerns, and develop plans to minimize disruptive effects. Strategies may include:

- Issue construction updates and post them on the Project website
- Provide advance notice of roadway closures, driveway closures, and utility shutoffs
- Conduct public meetings
- Establish a 24-hour construction hotline
- Prepare materials with information about construction
- Address property access issues
- Assign staff to serve as liaisons between the public and contractors during construction

In addition, the Council will develop and implement a construction staging plan (staging plan), which will be reviewed with the appropriate jurisdictions and railroads, and the contractor will be required to secure the necessary permits and follow the staging plan, unless otherwise approved. Components of a staging plan include traffic management plans and a detailed construction timeline.

3.3 Neighborhood and Community

This section describes potential long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on neighborhoods and community facilities (see Section 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis; a description of existing neighborhoods and community facilities; an assessment of the anticipated environmental consequences related to neighborhoods and community facilities; and a description of mitigation measures that will be implemented with the Project.

3.3.1 Regulatory Context and Methodology

This section includes definitions of the neighborhood and community study area and of community facilities as used in this analysis, and a description of the methodology used to determine neighborhood and community impacts.

3.3.1.1 Neighborhood and Community Study Area

The primary study area for the neighborhood and community analysis includes a half-mile radius on either side of the proposed light rail alignment centerline, and a one-half mile radius from the center point of the proposed light rail stations (referred to in this section as “station areas”); a half-mile radius is commonly used to represent the approximate maximum distance most transit users will walk to access a light rail

station. In some cases, the study area for a given environmental category was used, as appropriate, depending on the degree of impact.

The study area comprises portions of five communities. For the purpose of this analysis, communities are defined as the portion of the affected city (i.e., Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis) that lies within the study area. This analysis also includes an evaluation of existing neighborhoods within each community. Specific neighborhoods with geographically defined boundaries are formally identified in the Cities of St. Louis Park and Minneapolis, and those geographic boundaries are used in this analysis. Formal neighborhoods with defined geographic boundaries are not identified for the Cities of Eden Prairie, Minnetonka, and Hopkins. For the purpose of this analysis, neighborhoods within these cities are identified using a proposed light rail station area (i.e., half-mile radius) as a geographic reference in describing neighborhoods where formal neighborhood boundaries are not present.

3.3.1.2 Definition of Community Facilities

For the evaluation of community facilities, a public facilities resource inventory was conducted for specific buildings or sites within the study area. Data pertaining to community services were collected from the five cities through which the Project will pass, and locations of facilities were verified through field observation. For the purpose of this analysis, community facilities include land uses that are frequently used by the public, such as schools, colleges, libraries, community centers, parks/recreation areas/open spaces,¹⁵ medical facilities, places of worship, funeral chapels, and police and fire departments. Community facilities can be either publicly or privately owned.

While the analysis identifies the locations of public safety and emergency response facilities (i.e., police and fire), potential effects on the provision of these services are discussed in Section 4.6. A description of public utilities is provided in Section 3.15. Data on places of worship and school facilities are limited to identifiable buildings used regularly by community members and do not include locations of home-based practicing faiths or other religious study groups, or home-schooling facilities. Potential impacts to trails are addressed in Section 4.5.

3.3.1.3 Methodology for the Determination of Neighborhood and Community Effects

The analysis of long-term and short-term direct and indirect neighborhood and community effects is based on the following three criteria, each of which use a variety of measures as indicators of effect: changes to community facilities access; changes to community character; and changes to community cohesion.¹⁶ Table 3.3-1 provides a summary of the measures used in this analysis for each of the neighborhood and community effects criteria. The evaluation measures are based on the findings included within this Final EIS for the following environmental categories: land use (Section 3.1), acquisitions and displacements (Section 3.4), visual quality and aesthetics (Section 3.7), noise (Section 3.12), vibration (Section 3.13), and transportation (Chapter 4).

¹⁵ Parks, recreation areas, and open spaces may be subject to evaluation in the context of Section 4(f) of the Department of Transportation Act of 1966, which governs the use of publicly-owned and publicly accessible park and recreation areas of local significance, wildlife and waterfowl refuges, and historic resources independent of ownership. The study area for the neighborhoods and community study area is larger than the study area for parks, recreation areas, and open spaces; therefore, there are more parks identified in the neighborhood and community analysis than in the parks, recreations areas, and open spaces analysis. For additional information on parks and recreation areas, including the parks, recreation areas, and open spaces study area, see Section 3.6 and Appendix I.

¹⁶ Public health is an important Project consideration with respect to neighborhoods and communities. While not specifically evaluated in the neighborhood and community analysis, public health and health equity are outcomes of multiple criteria and measures (see Table 3.3-1).

TABLE 3.3-1
Neighborhood and Community Impact Criteria and Measures

Criteria	Measure ^a
Community Facilities	<ul style="list-style-type: none"> • Physical property acquisition and/or displacement of the facility • Noise and vibration impacts to community facilities • Changes to roadways and transit service that can effect transit access to community facilities
Community Character	<ul style="list-style-type: none"> • Noise and vibration impacts on residences and business within a neighborhood • Visual changes within a neighborhood; property conversion (i.e., acquisitions of existing public or private property and its conversion to a publicly-owned transportation or related facility) • New at-grade light rail crossings of roadways and bicycle/pedestrian facilities
Community Cohesion	<ul style="list-style-type: none"> • Introduction of new physical barriers • Changes to the local road network • Changes to the bicycle and pedestrian network; and changes to parking

^a All measures are derived from findings included within this Final EIS for the respective environmental category. All changes are compared to the No Build Alternative.

Source: Council, 2015.

3.3.2 Affected Environment

This section describes each of the neighborhoods and communities within the study area, including a summary of the general characteristics of each community (i.e., city) and a description of existing community facilities.¹⁷ This section includes a description of the existing community character (e.g., development patterns, important physical features, residential neighborhoods), as well as existing major community connections and barriers (e.g., highways, freight rail alignments, trails).

3.3.2.1 Eden Prairie

Table 3.3-2 describes the existing community character (e.g., development patterns, important physical features, residential neighborhoods), and community connections and barriers within the study area in Eden Prairie, by proposed light rail station area. Table 3.3-3 lists the existing community facilities within the study area in the City of Eden Prairie, and they are mapped on Exhibit 3.3-1.

¹⁷ For this analysis, communities are defined as the cities within which the neighborhood and community study area lies (i.e. Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis). Community facilities include land and building uses that are frequently used by the public, such as schools, colleges, libraries, community centers, parks, medical facilities, places of worship, funeral chapels, and police and fire departments. Community facilities can be either publicly or privately owned.

TABLE 3.3-2

Community Character – City of Eden Prairie^a

Station Area ^b	Community Character	Community Connections and Barriers
SouthWest Station	<ul style="list-style-type: none"> Highway-oriented commercial development, retail, and open space Existing park-and-ride lot (SouthWest Transit Center) and a neighborhood retail center along the north side of Technology Dr, west of Prairie Center Dr Purgatory Creek Conservation Area, a 200-acre wetland area with a 7-acre park and 2.5 miles of walking trails, south of Technology Dr Residential condominiums to the west of SouthWest Station 	<ul style="list-style-type: none"> Technology Dr provides the primary connection to neighborhoods to the west and east. Prairie Center Dr provides connections to residential neighborhoods to the north and south. Hwy 212 provides access to the regional roadway system at Prairie Center Dr but creates a barrier to north-south connectivity. Sidewalks and trails are present on at least one side of all roads within the study area. Access provided by pedestrian and bicycle network in the area is discontinuous.
Eden Prairie Town Center Station	<ul style="list-style-type: none"> Highway-oriented commercial/retail development Large regional shopping center (Eden Prairie Center) and employment along Flying Cloud Dr Multifamily housing located along the north side of Single Tree Ln 	<ul style="list-style-type: none"> Technology Dr, Eden Rd, and Single Tree Ln provide east-west connectivity, and Prairie Center Dr and Flying Cloud Dr provide north-south connectivity. Lack of pedestrian connectivity to station Trails are located on at least one side of major roadways; no direct bicycle access from the north, south or west.
Golden Triangle Station	<ul style="list-style-type: none"> Highway-oriented industrial employment center and high-density residential on east side of Hwy 212 Low-density, single-family residential neighborhood on the west side of Hwy 212 	<ul style="list-style-type: none"> Shady Oak Rd, Valley View Rd, and Golden Triangle Dr provide neighborhood connectivity east of Hwy 212, and Bryant Lake Dr provides connectivity west of Hwy 212. This area is generally bounded by Hwy 212 on the west, Hwy 169 on the east, and I-494 to the south, all of which are barriers to neighborhood connectivity. No sidewalks in study area. Limited bicycle access to existing land uses and station.
City West Station	<ul style="list-style-type: none"> Large employment center, undeveloped land, high-density residential, low-density single-family residential, and neighborhood commercial No established residential neighborhoods 	<ul style="list-style-type: none"> Hwy 212, Hwy-62, and Shady Oak Rd. Few sidewalks and trails; no pedestrian access to station from north or east; trail connection under construction will provide access from the west. Trails have limited connectivity to larger transportation system; no bicycle access to the station from the north and east.

^a Within the neighborhood and community study area.^b Within a half-mile radius of the proposed light rail station.

Source: Council, 2015.

TABLE 3.3-3

Community Facilities – City of Eden Prairie^a

Community Facility	Station Area	Address	Type of Facility
St. Andrew Lutheran Church	SouthWest	13600 Technology Dr	Place of worship
Eden Prairie Center Clinic	SouthWest	830 Prairie Center Dr	Healthcare provider
Purgatory Creek Park	SouthWest	13001 Technology Dr	Park/recreation area/open space
Northwest Technical Institute	Eden Prairie Town Center	11995 Single Tree Ln	Educational
Eagle Ridge Academy	Golden Triangle	7255 Flying Cloud Dr	Educational
Nine Mile Creek Conservation Area	Golden Triangle	East of Hwy 212 and Flying Cloud Dr	Park/recreation area
Flying Cloud Dog Park	Golden Triangle	7171 Flying Cloud Dr	Park/recreation area

^a Within the neighborhood and community study area.

Source: Council, 2015.

EXHIBIT 3.3-1

Neighborhoods and Community Facilities – Eden Prairie



3.3.2.2 Minnetonka

Table 3.3-4 describes the existing community character (e.g., development patterns, important physical features, residential neighborhoods) and the major community connections and barriers within the study area in Minnetonka, by proposed light rail station area. Table 3.3-5 lists the existing community facilities within the study area in the City of Minnetonka. Community facilities are mapped on Exhibit 3.3-2.

TABLE 3.3-4
Community Character – City of Minnetonka

Station Area	Community Character	Community Connections and Barriers
Opus Station	<ul style="list-style-type: none"> • Employment center with more than 12,000 jobs. • Existing residential neighborhoods west of Shady Oak Rd. Housing includes a mix of suburban-style, single-family detached units, attached condominium townhome units, and multiunit apartment complexes. 	<ul style="list-style-type: none"> • Shady Oak Rd and Bren Rd E provide limited connectivity within the area. • Suburban street system of cul-de-sacs and dead-end street located northwest of the proposed Opus Station limits connectivity. • Hwy 62 on the south and Hwy 169 are barriers. • Sidewalks on at least one side of all streets in study area; trail network provides pedestrian and bicycle access between the station and surrounding land uses.

^a Within the neighborhood and community study area.

Source: Council, 2015.

TABLE 3.3-5
Community Facilities – City of Minnetonka^a

Community Facility	Station Area	Address	Type of Facility
Bren Education Center	Opus	11140 Bren Rd W	Educational
Unnamed open space B	Opus	Between Bren Rd W on the south, Smetana Rd on the north, Green Circle Dr on the east, and private residential and commercial properties on the west.	Park/recreation area/open space
Opus Commercial District Trails	Opus	Trail system located within the Opus Commercial district north of Hwy 62 and east of Shady Oak Rd	Multiuse trail
Shady Oak Beach Park	Shady Oak	5200 Shady Oak Rd	Park/recreation area/open space
West Oaks Community Church	Shady Oak	11901 Excelsior Blvd	Place of worship
Cross of Glory Baptist Church	Shady Oak	4600 Shady Oak Rd	Place of worship
Lone Lake Park	Opus Station	5624 Shady Oak Rd	Park/recreation area/open space
Green Circle Park	Opus Station	5600 Green Circle Dr	Park/recreation area/open space

^a Within the neighborhood and community study area.

Source: Council, 2015.

3.3.2.3 Hopkins

Table 3.3-6 describes the existing community character (e.g., development patterns, important physical features, residential neighborhoods), and major community connections and barriers within the study area in Hopkins, by proposed light rail station area. Table 3.3-7 lists the existing community facilities within the study area in the City of Hopkins. Community facilities are mapped on Exhibit 3.3-3.

EXHIBIT 3.3-2

Neighborhoods and Community Facilities –Minnetonka

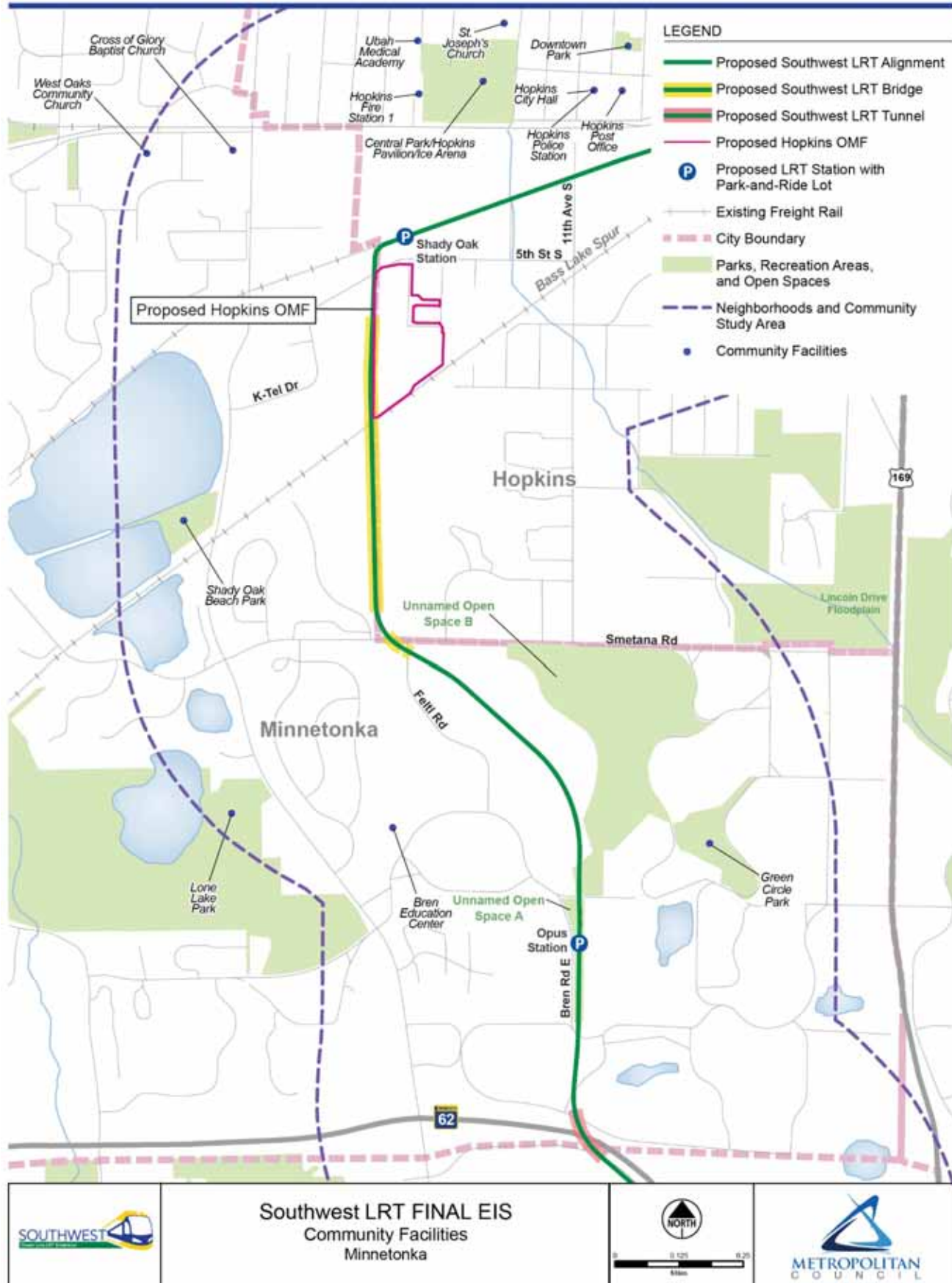


EXHIBIT 3.3-3

Neighborhoods and Community Facilities – Hopkins

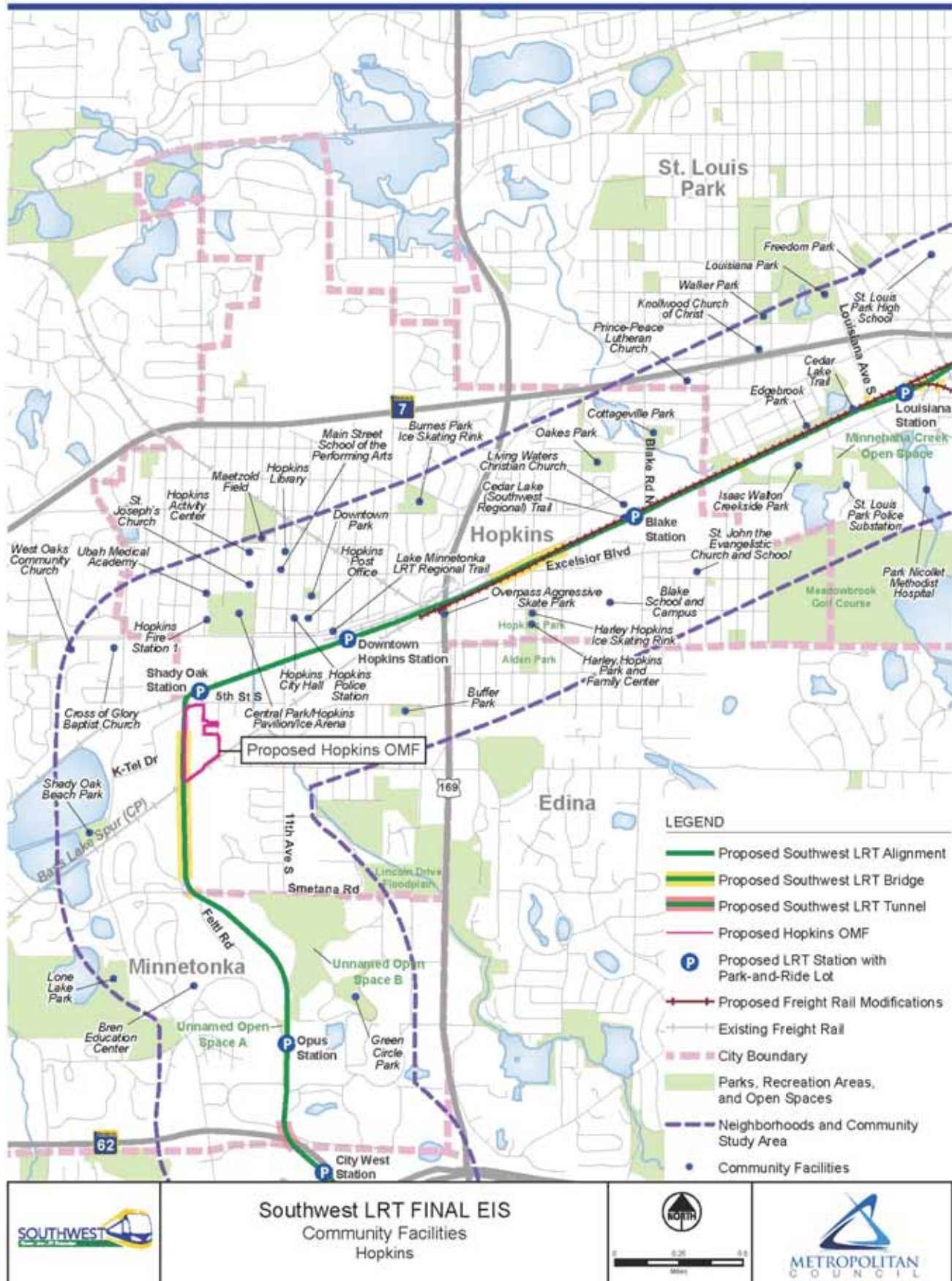


TABLE 3.3-6

Community Character – City of Hopkins^a

Station Area	Community Character	Community Connections and Barriers
Shady Oak Station	<ul style="list-style-type: none"> Predominantly single-family detached and attached condominium townhouse units; multi-unit apartment complexes north of Excelsior Blvd. Employment center with auto- and industrial-related jobs; the City of Hopkins Public Works Facility, Hopkins Pavilion, Hopkins Fire Department, and Central Park located to the north of the station along Excelsior Blvd. 	<ul style="list-style-type: none"> Hwy 3 (Excelsior Blvd) provides east-west connections and Shady Oak Rd provides north-south connections but both create barriers to pedestrian connectivity. 17th Ave N provides a north-south neighborhood connection between the northern residential area and the industrial area immediately surrounding the station while 11th Ave S provides a north-south connection that extends beyond the corridor. The Minnesota River Bluffs LRT Regional Trail provides east-west pedestrian and bicyclist connections south of Excelsior Blvd. Sidewalks present along some but not all roadways limits pedestrian accessibility. The Bass Lake Spur freight rail creates a barrier.
Downtown Hopkins Station	<ul style="list-style-type: none"> Industrial uses to the south of Excelsior Blvd with highway and downtown commercial and medium and high residential density to the north. Single-family attached and detached housing north of the Lake Minnetonka Regional LRT Trail with multi-unit apartment complexes along Excelsior Blvd. and Main St. Hopkins City Hall located to the northwest along 11th Avenue S. and the Supervalu Distribution Center, an existing employment center, is located to the east along Hwy 169. 	<ul style="list-style-type: none"> Hwy 169 and 11th Ave S provide north-south connections although Hwy 169, especially the Supervalu Distribution Center, limits east-west pedestrian connections. Excelsior Blvd provides east-west connectivity but east-west connectivity is limited south of Excelsior Blvd. The Minnesota River Bluffs LRT Regional Trail provides east-west pedestrian and bicyclist connections south of Excelsior Blvd. and the Lake Minnetonka LRT Regional Trail provides northeast-southwest pedestrian and bicyclist connections north of Excelsior Blvd to 6th Ave N. Sidewalks are present along most roadways. The Bass Lake Spur freight rail creates a barrier.
Blake Station	<ul style="list-style-type: none"> Light-industrial, commercial, public uses, and single-family and multifamily residential development. Mix of residential densities, including single-family attached and detached housing and multifamily units. Highway commercial and Hopkins Cold Storage site and other shipping and receiving facilities provide employment opportunities. Public uses include Blake Middle School and 43 Hoops Basketball Academy. 	<ul style="list-style-type: none"> Hwy 169 and Blake Rd provide north-south connections although Hwy 169 also limits east-west pedestrian connections. Excelsior Blvd. and Hwy 7 provide east-west connections although Hwy 7 also limits north-south pedestrian connections; east-west connectivity limited south of Excelsior Blvd. The Cedar Lake Regional Trail provides southwest-northeast pedestrian and bicyclist connections to the station and provides a connection to the Minnesota River Bluffs LRT Regional Trail at the Depot Coffee House; North Cedar Lake Regional Trail provides north-south pedestrian and bicycle connectivity. Sidewalks present on both sides of most roadways. The Bass Lake Spur freight rail creates is a barrier.

^a Within the neighborhood and community study area.

Source: Council, 2015.

TABLE 3.3-7

Community Facilities – City of Hopkins^a

Community Facility	Station Area	Address	Type of Facility
Central Park/Hopkins Pavilion/Ice Arena	Shady Oak	101 16th Ave South	Park/recreation area/open space
Hopkins Fire Station 1	Shady Oak	101 17th Ave South	Public facility
Ubah Medical Academy	Shady Oak	1600 Main St	Educational
St. Joseph's Church	Shady Oak	1310 Main St	Place of worship
Minnesota Bluffs LRT Regional Trail	Shady Oak and Downtown Hopkins	Runs along the south side of the Twin Cities Western railroad right-of-way in Hopkins, from approx. Hwy 169, and extends to Chanhassen. Connects to the Cedar Lake LRT Regional Trail, which continues into St. Louis Park and Minneapolis.	Multiuse trail

Community Facility	Station Area	Address	Type of Facility
Hopkins Activity Center	Downtown Hopkins	33 14th Ave North	Public facility
Hopkins Center for the Arts/Mainstreet School for the Performing Arts	Downtown Hopkins	1111 Main St	Educational
Maetzold Field	Downtown Hopkins	1215 1st St N	Park/recreation area/open space
Hopkins Police Station	Downtown Hopkins	1010 1st St S	Public facility
Hopkins City Hall	Downtown Hopkins	1010 1st St S	Public facility
Hopkins Library	Downtown Hopkins	22 11th Ave N	Public facility
Hopkins Post Office	Downtown Hopkins	910 1st St S	Public facility
Downtown Park	Downtown Hopkins	40 9th Ave S	Park/recreation area
Burnes Park Ice Skating Rink	Downtown Hopkins	301 2nd St N	Park/recreation area
Overpass Aggressive Skate Park	Downtown Hopkins	100 Washington Ave S	Park/recreation area/open space
Buffer Park	Downtown Hopkins	400 5th St S	Park/recreation area/open space
Lake Minnetonka LRT Regional Trail	Downtown Hopkins	Runs north along 6th Ave S from the Cedar Lake (Southwest Regional) Trail in Hopkins in route to Minnetonka.	Multiuse trail
Cedar Lake LRT Regional Trail	Blake	Runs along the south sides of the Twin Cities Western railroad right-of-way in Hopkins and continues into St. Louis Park and Minneapolis. Connects to the Minnesota Bluffs LRT Regional Trail on the west side of Hwy 169.	Multiuse trail
Living Waters Christian Church	Blake	1002 2nd St N	Place of worship
Oakes Park	Blake	900 Lake St NE	Park/recreation area/open space
Cottageville Park	Blake	415 Blake Rd N	Park/recreation area/open space
St. John the Evangelistic Church and School	Blake	6 Interlachen Rd	Place of worship/Education
Blake School and Campus	Blake	110 Blake Rd S	Educational
Harley Hopkins Park and Family Center	Blake	501 1st St S	Park/recreation area/open space
Harley Hopkins Ice Rink	Blake	108 Jackson Ave S	Park/recreation area/open space

^a Within the neighborhood and community study area.

Source: Council, 2015.

3.3.2.4 St. Louis Park

The City of St. Louis Park has formally recognized neighborhoods with defined geographic boundaries (see Exhibit 3.3-4), 10 of which fall partially within the study area. Table 3.3-8 describes the existing community character (e.g., development patterns, important physical features, residential neighborhoods), and community connections and barriers for each of the St. Louis Park neighborhoods within the study area. Table 3.3-9 lists the existing community facilities within the study area in the City of St. Louis Park. Community facilities are mapped on Exhibit 3.3-4.

EXHIBIT 3.3-4

Neighborhoods and Community Facilities – St. Louis Park

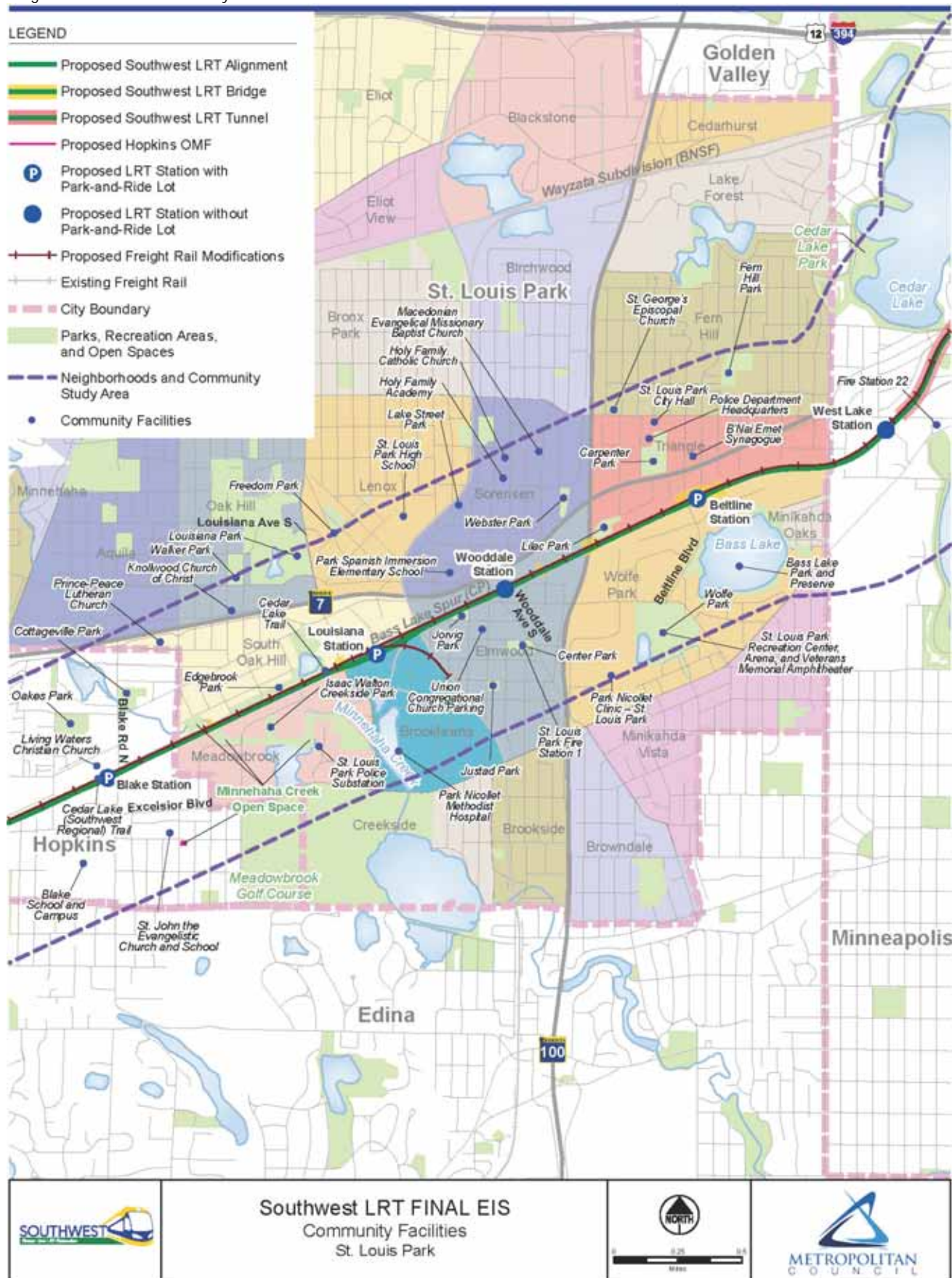


TABLE 3.3-8

Community Character – City of St. Louis Park^a

Neighborhood ^b	Station Area	Community Character ^c	Community Connections and Barriers
Oak Hill	Louisiana Station	<ul style="list-style-type: none"> This neighborhood occupies 277 acres with 26 residential blocks in the geographic center of the city. Single-family residential is the most common land use. Parks and open space account for 25.8% of the land use, with commercial/industrial uses accounting for less than 1%. The 1,182 residential housing units are divided between 636 single-family homes, 128 condominiums, 2 town homes, 388 apartment units, and 28 duplexes. The largest park in the city, Oak Hill Park, is in this neighborhood. 	<ul style="list-style-type: none"> Louisiana Ave S provides a continuous north-south connection along the eastern border of the neighborhood and Texas Avenue S provides a continuous north-south connection along the western border of the neighborhood. Trails along both sides of Louisiana provides bicycle access. Minnetonka Blvd provides a continuous east-west connection along the northern border of the neighborhood as does Hwy 7, which also limits pedestrian connectivity. The neighborhood includes a mix of grids and cul-de-sacs separated by parkland, which limit auto connectivity but provide pedestrian and bicyclist connectivity throughout the neighborhood.
South Oak Hill	Louisiana Station	<ul style="list-style-type: none"> This neighborhood occupies approximately 195 acres, with 12 blocks for residential land uses. Most of the 300 housing units are single-family detached homes (288); 12 homes are duplex units. Commercial and industrial land uses account for approximately 27.8% of the total neighborhood's acreage. Parks and open space account for 8% of the neighborhood's land area and include Edgebrook Park. 	<ul style="list-style-type: none"> Louisiana Ave S provides access to a north-south connection to the neighborhood and Texas Ave N, which terminates south of Lake St, provides direct access to the neighborhood along its western border. West Lake St provides an east-west connection that terminates at the western border of the neighborhood and does not intersect the north-south Texas Ave N connection but continues east to connect to Wooddale Ave. Texas Ave N and West Lake St via Louisiana Ave S are the only auto accessible access points to the neighborhood. The Cedar Lake Trail provides east-west pedestrian and bicyclist connections and provides access to the neighborhood at Rhode Island Avenue S.
Meadowbrook	Louisiana Station	<ul style="list-style-type: none"> The neighborhood occupies approximately 173 acres and includes a mix of land uses. Commercial and industrial lands account for more than 50% of the total neighborhood land area, with housing and parks or open spaces contributing much of the remaining land area. Minnehaha Creek flows through the neighborhood, and public spaces include the St. Louis Park Municipal Service Center and Isaac Walton League/Creekside Park. 	<ul style="list-style-type: none"> Excelsior Blvd provides a continuous east-west connection along the southern border of the neighborhood. Louisiana Avenue S provides a north-south connection along the eastern border of the neighborhood. Meadowbrook Lane and Meadowbrook Blvd provide the only two access points to the curvilinear residential section of the neighborhood, with Excelsior Way a dead-end street that provides access for a single row of apartment complexes. The curvilinear nature of these streets limit pedestrian connectivity. The Cedar Trail provides east-west pedestrian and bicyclist connections and can be accessed from Louisiana Ave S. The Bass Lake Spur borders to the neighborhood along its northern edge and limits connectivity.
Lenox	Louisiana Station	<ul style="list-style-type: none"> The neighborhood occupies a total of approximately 285 acres and includes mostly residential land use. The residential mix is 825 single-family homes, 13 apartment units, and 30 duplex units. The Lenox Community Center, the Senior Highway School, the St. Louis Park Public Library, Roxbury Park, Freedom Park, and Parkview Park are located in this neighborhood. 	<ul style="list-style-type: none"> Louisiana Ave S provides a north-south connection along the western border of the neighborhood and Dakota Ave S provides the only other continuous north-south connection through the neighborhood. Minnetonka Blvd borders the neighborhood along its northern edge and Walker St runs east-west through the southern portion of the neighborhood. These two streets are the only continuous east-west connections through the neighborhood while Hwy 7, which runs parallel to and south of Walker St, limits connectivity. The neighborhood is comprised of a grid except for the portion located east of Louisiana Ave S, north of Walker St, and southwest of Library Ln, which runs diagonally through the southwestern portion of the neighborhood.
Brooklawns	Louisiana Station	<ul style="list-style-type: none"> The neighborhood occupies approximately 150 acres of land, with 57.8% of the land area occupied by commercial or industrial land uses. 	<ul style="list-style-type: none"> Louisiana Ave S provides a north-south connection along the western border of the neighborhood. Alabama Ave S provides a north-south connection from Excelsior Blvd to 36th St, which intersects Wooddale Ave.

Neighborhood ^b	Station Area	Community Character ^c	Community Connections and Barriers
		<ul style="list-style-type: none"> The signature feature of the neighborhood is Methodist Hospital, a large regional hospital serving the central and southwest metropolitan region. The neighborhood is bordered to the north by the Bass Lake Spur freight railroad corridor, which has contributed to the development of industrial land uses. 	<ul style="list-style-type: none"> Trails along both sides of Louisiana provides bicycle access. Excelsior Blvd provides the only continuous east-west connection with four access points to the neighborhood. Oxford St provides access to the northern portion of the neighborhood from Louisiana Ave S and Cambridge St provides access from Alabama Ave S but both streets terminate within the neighborhood and are connected by the north-south running Edgewood Ave S, which also terminates within the neighborhood. Although the Cedar Lake Trail runs along the northern border of the neighborhood, the closest access point from the neighborhood is at Wooddale Ave S. Access to the neighborhood is limited by the MN&S Spur along its eastern border and by the Bass Lake Spur along its northern border; connectivity within the neighborhood is limited by the Skunk Hollow switching wye that bisects Brunswick Ave S.
Sorenson	Wooddale Station	<ul style="list-style-type: none"> The neighborhood comprises approximately 208 acres, most of which is residential use. Commercial, industrial, and parks and open spaces contribute a small percentage of the land use in the neighborhood. Civic facilities include the Central Community Center, Keystone Park, and Webster Park. 	<ul style="list-style-type: none"> Hwy 7 provides an east-west connection along the southern border of the neighborhood but greatly limits connectivity to the neighborhood. The only southern access point to the neighborhood is along the diagonally running Wooddale Ave S, which becomes Dakota Ave S as it turns directly north. Hwy 100 is a north-south connection but greatly limits east-west connectivity along the eastern border of the neighborhood. The neighborhood is comprised of an asymmetrical grid with West Lake St bisecting the neighborhood diagonally southwest from Walker St and runs northeast to Minnetonka Blvd. Access to the neighborhood is limited by the MN&S Spur along its western border. The east-west running Cedar Lake Trail can be accessed from Wooddale Ave S. Commercial and residential areas are generally served by intermittent sidewalk network; sidewalks are lacking in industrial areas.
Elmwood	Wooddale Station	<ul style="list-style-type: none"> The neighborhood occupies approximately 232 acres of land and includes 518 housing units. The housing stock is split between single-family detached units (272), apartments (168), and duplex units (78). One of St. Louis Park's oldest neighborhoods, with roots dating back to the 1880s, when housing development was influenced by the railroad. Many of the city's original homes are located in this neighborhood. Two neighborhood parks, Jorvig Park and Justad Park, are located in the neighborhood, as is St. Louis Park Fire Station #1 on Wooddale Dr. 	<ul style="list-style-type: none"> Hwy 7 provides an east-west connection north of the neighborhood but greatly limits the connectivity of the neighborhood. The only northern access point to the neighborhood is along Wooddale Ave S. Excelsior Blvd. provides an east-west connection with three access points to the neighborhood. Hwy 100 provides a north-south connection with an exit to Wooddale Ave S, but greatly limits east-west connectivity. The neighborhood is comprised of a grid with Wooddale Ave S running diagonally northwest to southwest. The MN&S Spur borders to the neighborhood along the entire length of its western border and greatly limits connectivity. Trails along some roadways and the Cedar Lake Regional Trail provide bicycle access. The east-west running Cedar Lake Trail can be accessed from Wooddale Ave S.
Triangle	Beltline Station	<ul style="list-style-type: none"> The neighborhood is approximately 190 acres and includes a mixture of land uses, including residential, commercial, industrial, public, and public buildings and parks and open space. The neighborhood dates back to 1887 and was one of St. Louis Park's earliest subdivisions. 	<ul style="list-style-type: none"> Hwy 100 is a north-south connection that runs along the western border of the neighborhood but greatly limits east-west connectivity. Beltline Blvd provides the only continuous north-south connection through the neighborhood. East-west connections are Hwy 7, which greatly limits north-south connectivity, and Minnetonka Blvd, which runs along the northern border of the neighborhood.

Neighborhood ^b	Station Area	Community Character ^c	Community Connections and Barriers
		<ul style="list-style-type: none"> There are a variety of housing styles and types, including single-family detached, apartments, duplexes, and townhomes. Civic land uses include City Hall, the city police station, and Carpenter Park. 	<ul style="list-style-type: none"> The neighborhood is bordered along its entire southern border by the east-west running Cedar Lake Trail and the Bass Lake Spur; the Cedar Lake Trail can be accessed at Beltline Blvd or by a trail connection at Carpenter Park. The Bass Lake Spur limits north-south connectivity.
Wolfe Park	Beltline Station	<ul style="list-style-type: none"> The Wolfe Park neighborhood is approximately 386 acres and is the largest neighborhood in St. Louis Park. The land uses in the neighborhood are a mixture of high-density housing, commercial and industrial land uses, and parks and open spaces. On the south side, the neighborhood is bordered by Excelsior Blvd, one of St. Louis Park's primary commercial activity centers. The neighborhood has several amenities, including the Excelsior and Grand Commons mixed-use development, Wolfe Park, the St. Louis Park Recreation Center, and Bass Lake. 	<ul style="list-style-type: none"> Hwy 100 is a north-south connection that runs along the western border of the neighborhood but greatly limits east-west connectivity. Beltline Blvd. is a north-south connection through the neighborhood that provides the only northern access point to the neighborhood and terminates at 36th St W. W 36th St is an east-west connection that becomes Monterey Dr as it turns south to meet Excelsior Blvd. Excelsior is an east-west connection that provides southern access points to the neighborhood at Park Center Blvd and Monterey Dr. The neighborhood is bordered along its entire northern border by the east-west running Cedar Lake Trail and the Bass Lake Spur; the Cedar Lake Trail can be accessed at Beltline Blvd, Park Glen Rd, and France Ave S; the Bass Lake Spur greatly limits north-south connectivity.
Minikahda Oaks	Beltline Station	<ul style="list-style-type: none"> A very small residential neighborhood, occupying approximately 30 acres with 4 residential blocks. Parks and open space account for 22.3% of the land use, with commercial uses accounting for 2.3%. The 77 residential housing units are all single-family homes. There is one park (Bass Lake Park) in this neighborhood. 	<ul style="list-style-type: none"> The only auto connections to the neighborhood are Minikahda Court and France Ave S via Excelsior Blvd, which runs along the southern border of the neighborhood. France Ave S provides the only north-south connection to the majority of the neighborhood. Minikahda Court provides the only access to the southern portion of the neighborhood. The neighborhood is bordered on its west by the Bass Lake Preserve, by the Cedar Lake Trail and Bass Lake Spur to its north, and on its east by the Minikahda Club, which limit auto connectivity.

^a Within the neighborhood and community study area.

^b Formally designated by the City of St. Louis Park.

^c Applies to entire neighborhood and not just the study area.

Source: City of St. Louis Park, Neighborhoods Webpage, Access September, 2015 (<http://www.stlouispark.org/list-of-neighborhoods.html>).

TABLE 3.3-9

Community Facilities – City of St. Louis Park^a

Community Facility	Neighborhood/ Station Area	Address	Type of Facility
Cedar Lake Regional LRT Trail	Triangle, Elmwood, South Oak Hill/Beltline, Wooddale, Louisiana	Between Hwy 7 and existing Bass Lake Spur freight rail rights-of-way. Extends from Hopkins, through St. Louis Park, and into Minneapolis.	Multiuse trail
Prince-Peace Lutheran Church	South Oak Hill/Blake	8115 Hwy 7	Place of worship
Edgebrook Park	South Oak Hill/Louisiana	3920 Pennsylvania Ave	Park/recreation area/open space
Isaac Walton Creekside Park	Meadowbrook/Louisiana	7341 Oxford St	Park/recreation area/open space
Minnehaha Creek Open Space	Meadowbrook/Louisiana	East of Louisiana Ave and north of Excelsior Blvd	Park/recreation area/open space
St. Louis Park Police Substation	Meadowbrook/Louisiana	4072 Meadowbrook Ln	Public facility
Knollwood Church of Christ	Oak Hill/Louisiana	3639 Quebec Ave S	Place of worship

Community Facility	Neighborhood/ Station Area	Address	Type of Facility
Walker Park	Oak Hill/Louisiana	3500 Pennsylvania Ave S	Park/recreation area/open space
Louisiana Park	Oak Hill/Louisiana	3500 Louisiana Ave S	Park/recreation area/open space
Union Congregational Church Parking	Elmwood/Wooddale	3700 Alabama Ave S	Place of worship
Center Park	Elmwood/Wooddale	3750 Wooddale Ave	Park/recreation area/open space
Jorvig Park	Elmwood/Wooddale	6100 W 37th St	Park/recreation area/open space
Justad Park	Elmwood/Wooddale	5917 Cambridge St	Park/recreation area/open space
St. Louis Park Fire Station 1	Elmwood/Wooddale	3750 Wooddale Ave	Public facility
Holy Family Catholic Church	Sorensen/Wooddale	5900 W Lake St	Place of worship
Holy Family Academy	Sorensen/Wooddale	5925 W Lake St	Educational
Macedonian Evangelical Missionary Baptist Church	Sorensen/Wooddale	3208 Xenwood Ave S	Place of worship
Lake Street Park	Sorensen Wooddale	6212 W Lake St	Park/recreation area/open space
Park Spanish Emersion Elementary School	Sorensen/Wooddale	6300 Walker St	Educational
Webster Park	Sorensen/Wooddale	3301 Webster Ave	Park/recreation area/open space
Freedom Park	Lenox/Louisiana	3261 Gorham Ave	Park/recreation area/open space
St. Louis Park High School	Lenox/Wooddale	6425 W 33rd St	Educational
B’Nai Emet Synagogue	Triangle/Beltline	3115 Ottawa Ave S	Place of worship
Lilac Park	Triangle/Wooddale	NE quadrant of Hwy 100 and Bass Lake Spur right-of-way	Park/recreation area/open space
St. Louis Park City Hall	Triangle/Beltline	5005 Minnetonka Blvd	Public facility
Police Department Headquarters	Triangle/Beltline	3015 Raleigh Ave S	Public facility
Carpenter Park	Triangle/Beltline	3001 Raleigh Ave S	Park/recreation area/open space
St George’s Episcopal Church	Fern Hill/Beltline	5224 Minnetonka Blvd	Place of worship
Fern Hill Park	Fern Hill/Beltline	4421 28th St W	Park/recreation area/open space
Bass Lake Park and Preserve	Wolfe Park/Beltline	3450 Glenherst Ave	Park/recreation area/open space
St. Louis Park Recreation Center, Arena, and Veterans Memorial Amphitheater	Wolfe Park/Beltline	3700 Monterey Dr	Park/recreation area
Wolfe Park	Wolfe Park/Beltline	3700 Monterey Dr	Park/recreation area
Park Nicollet Clinic – St. Louis Park	Wolfe Park/Wooddale	3800 Park Nicollet Blvd	Healthcare clinic
Park Nicollet Methodist Hospital	Brooklawns/Louisiana	6500 Excelsior Blvd	Hospital

^a Within the neighborhood and community study area.

Source: Council, 2015.

3.3.2.5 Minneapolis

The City of Minneapolis has formally recognized neighborhoods with defined geographic boundaries (see Exhibit 3.3-5), nine of which fall partially within the study area.¹⁸ With an active freight rail alignment (i.e., Bass Lake Spur and Kenilworth Corridor) creating a barrier to community connectivity, the locations of crossings where motorists, pedestrians and bicyclists can safely cross the tracks is an important feature of the community. Today, the crossings are located at West Lake Street, Cedar Lake Parkway, Burnham Road, Penn Avenue South, Van White Memorial Parkway, East Lyndale Avenue, Glenwood Avenue, Royalston Avenue, and South 10th Street. The Kenilworth Regional Trail and the Cedar Lake Regional Trail also parallel the freight corridors throughout the City of Minneapolis, providing regional connectivity for pedestrians and bicyclists.

Table 3.3-10 describes the existing community character (e.g., development patterns, important physical features, residential neighborhoods) and the community connections and barriers for each of the Minneapolis neighborhoods within the study area. Table 3.3-11 lists the existing community facilities within the study area in the City of Minneapolis. Community facilities are mapped on Exhibit 3.3-5.

TABLE 3.3-10

Community Character – City of Minneapolis^a

Neighborhood ^b	Station Area	Community Character	Community Connections and Barriers
West Calhoun	West Lake Station	<ul style="list-style-type: none"> • Principally residential, including both medium- to high-density multifamily housing and low-density, single-family homes. • Includes a shopping center in the area of W Lake St. Lake Calhoun and the Minikahda Golf Course are community facilities located in this neighborhood. 	<ul style="list-style-type: none"> • W Lake St is an east-west connection that provides access to the neighborhood. • Excelsior Blvd provides a diagonally-running east-west continuous connection through the neighborhood. • W Calhoun Pkwy runs north-south along Lake Calhoun, which is also the eastern border of the neighborhood. • Neighborhood connectivity is limited by the Bass Lake Spur, which runs within the northeastern corner of the neighborhood. • The east-west Cedar Lake LRT Regional Trail provides pedestrian and bicycle access to the Station from the southwest and northeast; this trail becomes the Midtown Greenway at W Lake St, can be accessed via Chowen Ave S and Abbott Ave S.
Cedar Isles Dean	West Lake and 21st Street Stations	<ul style="list-style-type: none"> • Lake of the Isles, Cedar Lake, and the Kenilworth Lagoon are natural amenities that contribute to the character of the neighborhood and define its borders. • There are single-family residential neighborhoods to the east and west of the Kenilworth Corridor. 	<ul style="list-style-type: none"> • W Lake St is an east-west connection that provides many access points to the neighborhood. • Cedar Lake Pkwy is a north-south route that provides connectivity within the neighborhood. • Drew Ave S and Chowen Ave S provide north-south connections in the southwestern portion of the neighborhood and Dean Pkwy provides a north-south connection in the southeastern portion of the neighborhood. • The southwestern portion of the neighborhood is grid-like with the diagonally-running Sunset Blvd running east from France Ave S to Cedar Lake Ave. • The eastern half of the neighborhood is characterized by curvilinear streets, which limit pedestrian and bicycle connectivity as compared to a traditional street grid. • The Midtown Greenway runs east-west through the neighborhood and becomes the Kenilworth Trail at Cedar Lake Ave where it meets the Cedar Lake Trail that runs along western half of Cedar Lake. • Kenilworth Trail provides bicycle access to the 21st Street Station from the north and south, but residential roadways must be used for access from the east.

¹⁸ There are two historic (listed or eligible) neighborhood residential districts within the City of Minneapolis, including the Lake of the Isles Residential Historic District, and the Kenwood Parkway Residential Historic District. Refer to Section 3.5 for more information on historic districts.

Neighborhood ^b	Station Area	Community Character	Community Connections and Barriers
Kenwood	21st Street and Penn Stations	<ul style="list-style-type: none"> Primarily a residential community. Homes are built on the shores of Cedar Lake, while Lake of the Isles homes are set back from the lake on parkways, which provide low-speed routes for cars and paved or dirt trail systems for bikes, joggers, and walkers. The Kenilworth Lagoon connects Cedar Lake and Lake of the Isles and is used for boaters to travel between the lakes. 	<ul style="list-style-type: none"> W. Lake of the Isles Pkwy is a connection through the neighborhood that runs along the northern portion of Lake of the Isles and is the only southern access point for vehicles to the neighborhood. Kenwood Pkwy and Penn Ave S are north-south connections through the neighborhood Burnham Road is the only western access point for vehicles to the neighborhood. W 21st St is an east-west connection that bisects Penn Avenue S and terminates in the west at Cedar Lake and in the east at W Lake of the Isles Pkwy. The neighborhood is characterized by curvilinear streets and limited auto access into the neighborhood. The Kenilworth Trail is a north-south pedestrian and bicyclist connection that runs along the western edge of development within the neighborhood until it meets the Cedar Lake Trail at the northern edge of the neighborhood. Bike and pedestrian paths around the Lake of the Isles also connect to the neighborhood. The Bass Lake Spur runs adjacent to the Kenilworth Trail and creates a barrier to travel.
Bryn-Mawr	Penn and Van White Stations	<ul style="list-style-type: none"> The neighborhood includes residential and neighborhood-scale commercial land uses, as well as abundant parkland, including Theodore Wirth Park, Bassett Creek, Bryn Mawr Meadows, and Cedar Lake Park. Bordered on the south by the BNSF Wayzata Subdivision railroad corridor and the Cedar Lake Regional Trail. 	<ul style="list-style-type: none"> The neighborhood is bordered by the Bass Lake Spur to the south and the Wayzata Subdivision to the north. The neighborhood is bisected by Hwy 394, which limits north-south connectivity. The only southern access points into the southwestern portion of the neighborhood are Ewing Ave S. and Cedar Lake Pkwy. Cedar Lake Pkwy provides the only continuous north-south connection through the neighborhood where it turns into Theodore Wirth Pkwy as it crosses Hwy 394. Penn Avenue S and Van White Memorial Blvd. are two other north-south connections. Pedestrian and bicyclist connections are the Cedar Lake Trail, which runs along the southern border of the neighborhood, and Bassett's Creek Trail, which runs through Bryn Mawr Meadows Park to connect with the Cedar Lake Trail.
Harrison	Penn and Van White Stations	<ul style="list-style-type: none"> A mix of land uses, including residential, neighborhood commercial, and industrial. The neighborhood is bordered by Theodore Wirth Park, Olson Hwy (Hwy 55), I-394, and I-94. Features include Bassett Creek Park along Bassett Creek. Bordered on the south by the BNSF Wayzata Subdivision railroad corridor and the Cedar Lake LRT Regional Trail. 	<ul style="list-style-type: none"> Hwy 55 is an east-west connection, but it limits north-south connectivity within the neighborhood. Glenwood Avenue is the major east-west connection through the neighborhood and provides connections throughout the neighborhood. Hwy 94 is a north-south connection that also limits connectivity to and from the neighborhood. The Wayzata Subdivision railroad borders the neighborhood to the south except where it runs through the northeastern portion of the neighborhood in Theodore Wirth Park, creating a barrier to travel. Bassett Creek Trail and the Luce Line Extension provide several north-south and east-west pedestrian and bicyclist connections within the neighborhood. The Cedar Lake Trail can be accessed from the northernmost portion of the neighborhood by the Bassett Creek Trail via W Chestnut Avenue then Cedar Lake Road S, which connects with the southern portion of Bassett's Creek Trail with its northern portion.
Sumner Glenwood	Van White Station	<ul style="list-style-type: none"> Hwy 55 bisects the neighborhood, with I-94 serving as the eastern boundary. North of Hwy 55, the neighborhood is made up of predominantly single-family detached and low-rise apartment buildings. A regional commercial use, International Market Square, is located along the neighborhood's southern border. A charter school, vocational school, and public library are located on Hwy 55. 	<ul style="list-style-type: none"> Hwy 94 is a north-south connection along the eastern border of the neighborhood, but it limits connectivity to and from the neighborhood. Van White Memorial Blvd, N Bryant Ave, and West Lyndale Ave N provide north-south connections through the neighborhood. Hwy 55 is an east-west connection that bisects the neighborhood and limits connectivity. Glenwood Avenue is an east-west connection along the eastern border of the neighborhood and provides many access points to the neighborhood.

Neighborhood ^b	Station Area	Community Character	Community Connections and Barriers
Lowry Hill	Van White Station	<ul style="list-style-type: none"> The neighborhood has a mix of land uses but is primarily a retail commercial and residential neighborhood, with some multiunit apartment buildings, brownstone walkups, condominiums, and single-family detached housing. The Walker Art Gallery, Minneapolis Sculpture Garden, and Dunwoody Technical Institute are located in this neighborhood. 	<ul style="list-style-type: none"> Hwy 394 is an east-west connection that borders the neighborhood to the north, but it limits neighborhood connectivity. Hwy 94 borders the northeastern portion of the neighborhood and also presents connectivity challenges. Lyndale Ave S and Hennepin Ave are north-south connections that extend along the northeastern border of the neighborhood Kenwood Pkwy, Douglas Ave, Summit Ave, W Franklin Ave, and W 22nd St are east-west connections that extend across the neighborhood from its western to eastern borders. The Cedar Lake Trail runs north along Hwy 394 to connect with Bassett's Creek Trail and along Kenwood Pkwy to connect with the Loring Greenway.
North Loop	Royalston Station	<ul style="list-style-type: none"> The neighborhood has experienced redevelopment of warehouse buildings into apartments, condominiums, lofts, offices, and artist studio spaces. The Minneapolis Farmers Market is located in this neighborhood. 	<ul style="list-style-type: none"> Hwy 94 borders the neighborhood along its western border and Hwy 394 borders the neighborhood along its southern and most of its eastern border. Both highways present connectivity challenges. Plymouth Ave N is an east-west connection that borders the neighborhood to the north and N 3rd St is a north-south diagonally-running connection along the northeastern border of the neighborhood. N 7th St is also a north-south diagonally-running connection through the neighborhood. Olson Memorial Hwy and Glenwood Ave are also east-west connections through the neighborhood. The Cedar Lake Trail provides an east-west pedestrian and bicyclist connection through the southern half of the neighborhood. The Wayzata Subdivision railroad runs, which along the Cedar Lake Trail, creates a barrier to travel to north-south connections through the neighborhood.
Downtown West	Target Field Station ^c	<ul style="list-style-type: none"> The Downtown West neighborhood is an intensely developed urban core and central business district of downtown Minneapolis, with many high-rise office commercial towers, shopping centers, and entertainment facilities. Residential land uses are concentrated along the Mississippi River and some high- and medium-rise housing is available. 	<ul style="list-style-type: none"> Hwy 394 borders the neighborhood to the northwest and is an importation connection that limits connectivity to and from the neighborhood. Hennepin Ave borders the neighborhood along its northern border and provides connectivity. This neighborhood is characterized by large city blocks with several designated bicycle lanes.

^a Within the neighborhood and community study area.

^b Formally designated by the City of Minneapolis.

^c Target Field Station is an existing light rail station that will connect to the Southwest LRT Project.

Source: City of Minneapolis, Neighborhoods Webpage, Access September, 2015 (<http://www.ci.minneapolis.mn.us/neighborhoods/>).

TABLE 3.3-11

Community Facilities – City of Minneapolis^a

Community Facility	Neighborhood/ Station Area	Address	Type of Facility
Fire Station 22	West Calhoun/West Lake	3025 Market Plaza	Public facility
Minneapolis Chain of Lakes Regional Park, which includes Cedar Lake, Lake of the Isles, Lake Calhoun, Kenilworth Lagoon, Theodore Wirth Parkway	West Calhoun, Cedar-Isles Dean, Kenwood, Lowry Hill/West Lake, 21st, Penn	N/A ^b	Park/recreation area/open space
Kenilworth Trail	West Calhoun, Cedar-Isles Dean, Kenwood/West Lake, 21st, Penn	Generally runs along the east side of the Kenilworth Corridor and connects to the Cedar Lake Regional LRT Trail on the west and the Cedar Lake Trail on the east	Multiuse trail
Cedar Lake Trail	Kenwood, Bryn Mawr, Lowry Hill, North Loop/Penn, Wan White, Royalston	Generally runs along the south side of the Wayzata Subdivision freight rail alignment	Multiuse trail
Midtown Greenway	West Calhoun, Cedar-Isles Dean/West Lake	Generally runs east-west between Lake of the Isles and Lake Calhoun, parallel to Lake Street, until merging with the Kenilworth Corridor	Multiuse trail
Alcott Triangle	Cedar-Isles Dean	3400½ 29th St W	Park/recreation area/open space
Park Siding Park	Cedar-Isles Dean	3113 28th St W	Park/recreation area/open space
Kenwood Elementary	Kenwood/21st Street	2013 Penn Ave S	Educational
Performing Arts Magnet	Kenwood/21st Street	2013 Penn Ave S	Educational
Kenwood Park	Kenwood/Penn	2101 Franklin Ave W	Park/recreation area/open space
Lake of the Isles Lutheran Church	Kenwood/21st Street	2020 W Lake of the Isles Pkwy	Place of worship
St. Paul's Episcopal Church	Lowry Hill/Penn	1917 Logan Ave S	Place of worship
The Parade	Lowry Hill/Van White	400 Kenwood Pkwy	Park/recreation area/open space
Thomas Lowry Park	Lowry Hill/Van White	Douglas/Mt. Curve Ave	Park/recreation area/open space
Blake School Northrup Campus	Lowry Hill/Van White	511 Kenwood Pkwy	Educational
Loring Park	Loring Park/Van White	1500 Willow St	Park/recreation area/open space
Dunwoody Institute	Lowry Hill/Van White	818 Dunwoody Blvd	Educational
Basilica of St. Mary	Lowry Hill/Van White	88 17th St N	Place of worship
Minneapolis Community and Technical College	Loring Park/Van White	1501 Hennepin Ave	Educational
KIPP Charter School	Loring Park/Van White	1601 Laurel Ave	Educational
Fair School – Downtown	Downtown West/Royalston	10 S 10th St	Educational
Orpheum Theater	Downtown West/Royalston	910 Hennepin Ave	Commercial
State Theater	Downtown West/Royalston	805 Hennepin Ave	Commercial

Community Facility	Neighborhood/ Station Area	Address	Type of Facility
Pantages Theater	Downtown West/Royalston	710 Hennepin Ave	Commercial
First Avenue/7th Street Entry	Downtown West/Royalston	701 1st Ave N	Commercial
Augsburg Academy for Health Careers	Downtown West/Royalston	730 Hennepin Ave	Educational
Target Field	North Loop/Royalston	353 N 5th St	Sports stadium
Ubah Medical Academy Charter School	North Loop/Royalston	277 12th Ave N	Educational
Minnesota International Middle Charter School	North Loop/Royalston	277 12th Ave N	Educational
Twin Cities International Elementary	North Loop/Royalston	277 12th Ave N	Educational
Sumner Park	Sumner- Glenwood/Royalston	Bryant Ave/Olson Memorial Hwy	Park/recreation area/open space /open space
Bassett Creek Valley Park	Harrison/Van White	110 Penn Ave N	Park/recreation area
Fire Station 16	Harrison/Van White	1600 Glenwood Ave N	Public facility
Bryn Mawr Meadows Park	Bryn-Mawr/Penn	601 Morgan Ave S	Park/recreation area/open space
Bryn Mawr Elementary	Bryn-Mawr/Penn	252 Upton Ave S	Educational
Anwatin Middle School	Bryn-Mawr/Penn	256 Upton Ave S	Educational
Fire Station 4	North Loop/Royalston	1101 N 6th St	Public facility
Minneapolis Farmers Market	North Loop/Royalston	312 East Lyndale Ave N	Commercial

^a Within the neighborhood and community study area.

^b N/A = address is not applicable due to the size of the park. The Minneapolis Chain of Lakes Regional Park covers approximately 1,555 acres in nine neighborhoods in Minneapolis and St. Louis Park. Associated with the Minneapolis Chain of Lakes Regional Park is the 52-mile Grand Rounds National Scenic Byway, which is part of FHWA's National Scenic Byway Program. For a map of the Grand Rounds Scenic Byway, see <http://www.fhwa.dot.gov/byways/byways/2243/maps>.

Source: Council, 2015

3.3.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts on neighborhoods and communities from the Project. The evaluation of neighborhood and community effects includes an assessment of potential changes to community facilities access, community character, and community cohesion (refer to Section 3.3.3.1 for the methodology). This analysis considers evaluation measures that are based on the analysis for other environmental categories documented in this Final EIS. Refer to these other sections of the Final EIS for additional information regarding land use (Section 3.1), property acquisitions (Section 3.4), visual quality and aesthetics (Section 3.7), noise (Section 3.12), vibration (Section 3.13), and transportation (Chapter 4).

3.3.3.1 Long-term Direct Impacts on Neighborhoods and Communities

This section includes a summary of the potential direct and indirect impacts of the Project and the effect of those impacts on access to community facilities, community character, and community cohesion. The analysis in this section is organized by community (i.e., Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis), moving from southwest to northeast (see Exhibits 3.3-1 and 3.3-5).

EXHIBIT 3.3-5

Neighborhoods and Community Facilities – Minneapolis



Eden Prairie

As shown in Table 3.3-12 and summarized below, there will be no adverse impacts to community facilities, community character, or community cohesion within the City of Eden Prairie:

- **Community Facilities.** There are seven community facilities within the study area in the City of Eden Prairie (see Table 3.3-3 and Exhibit 3.3-1), including two educational facilities, one place of worship, three park/recreation areas, and one healthcare provider. Based on measures described in Table 3.3-12, none of these facilities will be adversely affected by the Project.
- **Community Character.** Some changes in visual character directly next to the proposed light rail alignment and associated improvements (e.g., structured park-and-ride lots, roadway modifications) may occur. Also, acquisition of some commercial, industrial, and residential properties is anticipated. These changes will be confined to limited areas and will not adversely impact the overall community character in the Eden Prairie portion of the study area.
- **Community Cohesion.** While changes in the local roadway, pedestrian, and bicycle networks will occur, existing roadway and sidewalk/trail connectivity and access will be maintained or improved, and there will be no adverse impacts to community cohesion within the study area in Eden Prairie.

TABLE 3.3-12

Impacts to Community Facilities, Community Character, and Community Cohesion – Eden Prairie

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
SouthWest Station	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> None. • <i>Noise and vibration impacts:</i> None. • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of community facilities, but access to these facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to St. Andrew Lutheran Church, Eden Prairie Center Clinic, and Purgatory Creek Park.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation • <i>Visual changes:</i> Moderate level of impact on representative viewpoints. As a mitigation, the Council will implement the <i>Visual Quality Design Guidelines for Key Structures</i> (Council, 2015 – refer to Appendix C to access the Guidelines). Considering mitigation, the Project will not change the overall visual quality of the area. • <i>Property conversion, acquisitions, and displacements:</i> Full acquisition of one commercial parcel (approx. one acre) and partial acquisition of eight commercial parcels (approximately 11 acres). These acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> None.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> LRT alignment will be on a new right-of-way near the proposed SouthWest Station (i.e., west LRT/Technology Dr intersection to east LRT/Technology Dr) (see Appendix E for the Project's preliminary engineering plans). The new light rail right-of-way will create a new physical barrier, but all existing roadway, sidewalk, and trail connections and access points will be maintained. • <i>Changes to the local roadway network:</i> New roadway turning lanes, changes in the number of through lanes, and other roadway geometric modifications (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> None. • <i>Changes to vehicle parking:</i> Addition of 450 park-and-ride spaces and reduction of 18 off-street parking spaces at commercial properties. Loss in off-street parking will not adversely affect surrounding neighborhoods because there will be adequate parking supply to meet the needs of the existing land uses (see Section 4.3.3 for more information on parking impacts).
Eden Prairie Town Center Station ^a	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> None. • <i>Noise and vibration impacts:</i> None. • <i>Changes in roadway access:</i> None. • <i>Changes to transit access:</i> Benefit of improved transit access to Northwest Technical Institute.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. • <i>Visual changes:</i> Low level of impact on representative viewpoint within this area. • <i>Property conversion, acquisitions, and displacements:</i> Full acquisition of one commercial parcel (approx. 2.3 acres) and partial acquisition of seven commercial and residential parcels (3.5 acres).

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
		<p>There will be no residential displacements and these acquisitions are not anticipated to change the overall land use of the surrounding areas.</p> <ul style="list-style-type: none"> <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> One new at-grade light rail/roadway crossing, which will be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	<ul style="list-style-type: none"> <i>New physical barriers:</i> LRT alignment will be on a new right-of-way from Prairie Center Dr to Eden Road, immediately west of the proposed Town Center Station (see Appendix E for the Project's preliminary engineering plans). The new light rail right-of-way will create a new physical barrier, but all existing roadway, sidewalk, and trail connections and access points will be maintained. <i>Changes to the local roadway network:</i> New roadway extension connecting Eden Road and Single Tree Lane, and other roadway geometric modifications will provide enhanced access to/from the proposed station (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. <i>Changes to the pedestrian and bicycle network:</i> None. <i>Changes to vehicle parking:</i> Addition of 150 on-street parking spaces and reduction of 131 off-street parking spaces. Loss in off-street parking will not adversely affect surrounding neighborhoods because there will be adequate parking supply to meet the needs of the existing land uses (see Section 4.3.3 for more information on parking impacts).
Golden Triangle Station	Community Facilities	<ul style="list-style-type: none"> <i>Property acquisition and displacement:</i> None. <i>Noise and vibration impacts:</i> None. <i>Changes in roadway access:</i> None. <i>Changes to transit access:</i> Benefit of improved transit access to Eagle Ridge Academy, Nine Mile Creek Conservation Area, and Flying Cloud Dog Park.
	Community Character	<ul style="list-style-type: none"> <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. <i>Visual changes:</i> Substantial level of impact on representative viewpoint within this area. As a mitigation, the Council will implement the <i>Visual Quality Design Guidelines for Key Structures</i> (Council, 2015 – refer to Appendix C to access the Guidelines). The Project will also include mitigation measures identified in Section 3.7.4. Considering these mitigation measures, the Project will not adversely affect the overall visual quality of the neighborhood. <i>Property conversion, acquisitions, and displacements:</i> Partial acquisition of 13 commercial and industrial parcels (approx. 10.4 acres). These acquisitions are not anticipated to change the overall land use of the surrounding areas. <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> One new at-grade light rail/roadway crossing, which will be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	<ul style="list-style-type: none"> <i>New physical barriers:</i> LRT alignment will be partially located on a new right-of-way from Flying Cloud Dr to Shady Oak Rd (see Appendix E for the Project's preliminary engineering plans). The new light rail right-of-way will create a new physical barrier, but all existing roadway, sidewalk, and trail connections and access points will be maintained. <i>Changes to the local roadway network:</i> Slight realignment of West 70th St and related geometric modifications (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. <i>Changes to the pedestrian and bicycle network:</i> None. <i>Changes to vehicle parking:</i> Addition of 200 park-and-ride spaces and reduction of 237 off-street parking spaces. Loss in off-street parking will not adversely affect surrounding neighborhoods because there will be adequate parking supply to meet the needs of the existing land uses (see Section 4.3.3 for more information on parking impacts).
City West Station	Community Facilities	<ul style="list-style-type: none"> <i>Property acquisition and displacement:</i> None. <i>Noise and vibration impacts:</i> None. <i>Changes in roadway access:</i> None. <i>Changes to transit access:</i> None.
	Community Character	<ul style="list-style-type: none"> <i>Noise and vibration impacts:</i> No adverse impacts after mitigation <i>Visual changes:</i> None. <i>Property conversion, acquisitions, and displacements:</i> Full acquisition of six commercial parcels (9.7 acres) and partial acquisition of 13 commercial and industrial parcels (approx. 3 acres). These acquisitions are not anticipated to change the overall land use of the surrounding areas. <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> None.
	Community Cohesion	<ul style="list-style-type: none"> <i>New physical barriers:</i> None. <i>Changes to the local roadway network:</i> Slight realignment of West 62nd St and related geometric modifications (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained.

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
		<ul style="list-style-type: none"> • <i>Changes to the pedestrian and bicycle network:</i> None. • <i>Changes to vehicle parking:</i> Addition of 160 park-and-ride spaces and reduction of 81 off-street parking spaces. Loss in off-street parking will not adversely affect surrounding neighborhoods because there will be adequate parking supply to meet the needs of the existing land uses (see Section 4.3.3 for more information on parking impacts).

^a As described in Section 2.1.1, the Eden Prairie Town Center Station and associated roadway improvements are deferred and are not expected to be in place when the Project opens in 2020. The station and associated roadway improvements are planned to be in place by 2040. If the station and associated roadway improvements are not in place by 2040, there would be Project effects on access to community facilities, community character, or community cohesion within the area of the proposed Eden Prairie Town Center Station.

Source: Council, 2015.

Minnetonka

As shown in Table 3.3-13 and summarized below, there will be no adverse impacts to community facilities, community character, or community cohesion within the City of Minnetonka:

- **Community Facilities.** There are eight community facilities within the study area in the City of Minnetonka (see Table 3.3-5 and Exhibit 3.3-2), including three park/recreation areas, one educational facility, one multiuse trail, and two places of worship. Based on the measures described in Table 3.3-13, none of these facilities will be adversely affected by the Project.
- **Community Character.** Some changes in visual character directly adjacent to the proposed light rail alignment and associated improvements (e.g., LRT alignment on structure, roadway modifications, etc.) may occur and the acquisition of some commercial, industrial, and residential properties is anticipated. These changes will be confined to limited areas and are not expected to adversely impact the overall community character within the study area in Minnetonka.
- **Community Cohesion.** While changes in the local roadway, pedestrian, and bicycle networks will occur, existing roadway and sidewalk/trail connectivity and access will be maintained or improved, and there will be no adverse impacts to community cohesion the Minnetonka portion of the study area.

TABLE 3.3-13

Impacts to Community Facilities, Community Character, and Community Cohesion – Minnetonka

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Opus Station	Community Facilities	<ul style="list-style-type: none"> • Property acquisition and displacement: None. • Noise and vibration impacts: None. • Changes in roadway access: None. • <i>Changes to transit access:</i> Benefit of improved transit access to Bren Education Center, Unnamed Open Space B, and Opus Commercial District Trails.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. • <i>Visual changes:</i> Substantial level of impact on representative viewpoint within this area. As a mitigation, the Council will implement the Visual Quality Design Guidelines for Key Structures (Council, 2015 – refer to Appendix C to access the Guidelines). The Project will also include mitigation measures identified in Section 3.7.4. Considering these mitigation measures, the Project will not adversely affect the overall visual quality of the neighborhood. • <i>Property conversion, acquisitions, and displacements:</i> Full acquisition of six commercial parcels (9.7 acres) and partial acquisition of 13 commercial and industrial parcels (approx. 3 acres). These acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> Two new at-grade light rail/roadway crossing which will be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> LRT alignment will be on a new right-of-way north of the proposed Opus Station, between Bren Rd W and Smetana Rd (see Appendix E for the Project's preliminary engineering plans). The new light rail right-of-way will create a new physical barrier, but all existing roadway, sidewalk, and trail connections and access points will be maintained. • <i>Changes to the local roadway network:</i> New roadway turning lanes, changes in the number of through lanes, and other roadway geometric modifications (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained.

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
		<ul style="list-style-type: none"> • <i>Changes to the pedestrian and bicycle network:</i> Stairs and ramps will be provided to make the connection between existing facilities and station; ramps will accommodate pedestrian and bicycle users, and will be ADA-compliant. • <i>Changes to vehicle parking:</i> Addition of 450 park-and-ride spaces and reduction of 18 off-street parking spaces at commercial properties. Loss in off-street parking will not adversely affect surrounding neighborhoods because there will be adequate parking supply to meet the needs of the existing land uses (see Section 4.3.3 for more information on parking impacts).

Source: Council, 2015.

Hopkins

As shown in Table 3.3-14 and summarized below, there will be no adverse impacts to community facilities, community character, or community cohesion within the City of Hopkins:

- **Community Facilities.** There are 25 community facilities within the study area in the City of Hopkins (see Table 3.3-7 and Exhibit 3.3-3), including six public facilities, three educational facilities, two places of worship, one facility that is both a place of worship and educational facility, 10 park/recreation areas, and three multiuse trails. Based on the measures described in Table 3.3-14, none of these facilities will be adversely affected by the Project.
- **Community Character.** Some changes in visual character within the vicinity of the proposed light rail alignment and associated improvements, and the acquisition of some commercial and industrial property. These changes will be generally confined to the areas directly adjacent to the existing Bass Lake Spur railroad corridor and will not adversely impact the overall community character within Hopkins.
- **Community Cohesion.** While changes in the local roadway, pedestrian, and bicycle networks within the City of Hopkins will occur as a result of the Project, existing roadway and sidewalk/trail connectivity and access will be maintained or improved, and there will be no adverse impacts to community cohesion in Hopkins.

TABLE 3.3-14

Impacts to Community Facilities, Community Character, and Community Cohesion – Hopkins

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Shady Oak Station	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> The Project will result in the partial acquisition of multiple parcels used for the Cedar Lake LRT Regional Trail. The Project will not displace the trail or have a long-term effect on trail users because all existing trail connections, access points, and roadway crossings will be maintained. • Noise and vibration impacts: None. • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of several community facilities, including additional turn lanes, a new cul-de-sac, extension of two existing streets, and elimination of one roadway; however, access to these facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to Shady Oak Beach Park, West Oaks Community Church, Cross of Glory Baptist Church, Central Park/Hopkins Pavilion/Ice Arena, Ubah Medical Academy, St. Joseph's Church, and the Minnesota Bluffs LRT Regional Trail.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. • <i>Visual changes:</i> Substantial level of impact for trail users within this area, but this impact is localized and will not adversely affect the overall community character of the area. • <i>Property conversion, acquisitions, and displacements:</i> Full acquisition of seven industrial parcels (30 acres) and partial acquisition of 12 industrial, commercial, and residential parcels (50 acres). There will be no residential displacements, and these acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> One new at-grade light rail/roadway crossing, which will be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
		<p>freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier.</p> <ul style="list-style-type: none"> • <i>Changes to the local roadway network:</i> New roadway extensions and a cul-de-sac to serve the new light rail station and park-and-ride lot, intersection reconfiguration to provide station access, and other roadway geometric modifications (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> ADA-compliant curb ramps and detectable warnings will be installed at modified roadway intersections. The Minnesota Bluffs LRT regional trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • <i>Changes to vehicle parking:</i> Addition of 700 park-and-ride spaces and reduction of 86 off-street parking spaces. Net gain of five on-street parking spaces (gain of 36 new spaces and loss of 31 spaces). Loss of parking will not adversely affect surrounding neighborhoods because there will be adequate parking supply to meet the needs of the existing land uses (see Section 4.3.3 for more information on parking impacts).
Downtown Hopkins Station	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> The Project will result in the partial acquisition of multiple parcels used for the Cedar Lake LRT Regional Trail. The Project will not displace the trail or have a long-term effect on trail users because all existing trail connections, access points, and roadway crossings will be maintained. • Noise and vibration impacts: None. • Changes in roadway access: None. • <i>Changes to transit access:</i> Benefit of improved transit access to Hopkins Activity Center, Hopkins Center for the Arts/Mainstreet School for the Performing Arts, Maetzold Field, Hopkins Police Station, Hopkins City Hall, Hopkins Library, Hopkins Post Office, Downtown Park, Burnes Park Ice Skating Rink, Overpass Aggressive Skate Park, Buffer Park, Minnesota Bluffs Regional Trail, and Lake Minnetonka LRT Regional Trail.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. • <i>Visual changes:</i> Low level of impact on representative viewpoint within this area. • <i>Property conversion, acquisitions, and displacements:</i> Partial acquisition of 11 commercial, industrial, and railroad parcels (52 acres). These acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> Two new at-grade light rail/roadway crossing, which will be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> One new traffic signal and other roadway/intersection geometric modifications (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> Stairs and ramps will be provided to make the connection between existing facilities and station, and crosswalk improvements at all four legs of the Excelsior Blvd and 8th Ave S intersection. The Minnesota Bluffs LRT Regional Trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • <i>Changes to vehicle parking:</i> Addition of 190 park-and-ride spaces.
Blake Station	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> The Project will result in the partial acquisition of multiple parcels used for the Cedar Lake LRT Regional Trail and the partial acquisition of one parcel used for the Blake School to allow for the reconstruction of an existing driveway. The Project will not displace the trail or have a long-term effect on trail users because all existing trail connections, access points, and roadway crossings will be maintained. The property acquisition adjacent to the Blake School will not displace any buildings associated with the Blake School, will not affect the operations of the School, and will not change access to and from the School. • Noise and vibration impacts: None. • <i>Changes in roadway access:</i> A new traffic signal will be installed at the Excelsior Boulevard and Pierce Avenue intersection at the entrance of a parking lot used for Blake School buses, but will not adversely affect access to the parking lot. • <i>Changes to transit access:</i> Benefit of improved transit access to Living Waters Christian Church, Oakes Park, Cottageville Park, St. John the Evangelistic Church and School, Blake School and campus, Harley Hopkins Park and Family Center, Harley Hopkins Ice Rink, and the Cedar Lake LRT Regional Trail.

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. • Visual changes: None. • <i>Property conversion, acquisitions, and displacements:</i> Full acquisition of three commercial and industrial parcels (2.6 acres) and partial acquisition of 12 commercial and railroad parcels (27.5 acres). These acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> One new at-grade light rail/roadway crossing, which will be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> New roadway extension to serve the new light rail station and park-and-ride lot, other roadway/intersection geometric modifications (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> New grade-separated trail crossing at Blake Road and ADA-compliant curb ramps and detectable warnings at modified roadway intersections. The Cedar Lake LRT regional trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • <i>Changes to vehicle parking:</i> Addition of 89 park-and-ride spaces.

Source: Council, 2015,

St. Louis Park

As shown in Table 3.3-15 and summarized below, there will be no adverse impacts to community facilities, community character, or community cohesion within the City of St. Louis Park:

- **Community Facilities.** There are 34 community facilities within the study area in the City of St. Louis Park (see Table 3.3-9 and Exhibit 3.3-4), including four public facilities (e.g., city hall, police station, etc.), three educational facilities, 7 places of worship, 17 park/recreation areas, one multiuse trail, one hospital, and one healthcare provider. Based on the measures described in Table 3.3-15, none of these facilities will be adversely affected by the Project.
- **Community Character.** Some minor changes in visual character directly adjacent to the proposed light rail alignment and associated improvements will occur and the acquisition of some commercial, industrial, and residential properties is anticipated. These changes will be confined to limited areas and will not adversely affect overall community character in St. Louis Park.
- **Community Cohesion.** While changes in the local roadway, pedestrian, and bicycle networks within the City of St. Louis Park will occur as a result of the Project, existing roadway and sidewalk/trail connectivity and access will be maintained or improved, and there will be no adverse impacts to community cohesion within St. Louis Park.

TABLE 3.3-15

Impacts to Community Facilities, Community Character, and Community Cohesion – St. Louis Park

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Oak Hill/ Louisiana Station	Community Facilities	<ul style="list-style-type: none"> • Property acquisition and displacement: None. • Noise and vibration impacts: None. • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of multiple community facilities (see Table 3.3-9), but access to these facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to Knollwood Church of Christ, Walker Park, and Louisiana Park.
	Community Character	<ul style="list-style-type: none"> • Noise and vibration impacts: None. • Visual changes: None. • Property conversion, acquisitions, and displacements: None.

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
		<ul style="list-style-type: none"> • New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: None.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • Changes to the local roadway network: None. • Changes to the pedestrian and bicycle network: None. • Changes to vehicle parking: None.
South Oak Hill/Blake and Louisiana Station	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> The Project will result in the partial acquisition of multiple parcels used for the Cedar Lake LRT Regional Trail. The Project will not displace the trail or have a long-term effect on trail users because all existing trail connections, access points, and roadway crossings will be maintained. • Noise and vibration impacts: None. • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of multiple community facilities (see Table 3.3-9), but access to these facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to Edgebrook Park, Prince-Peace Lutheran Church, and the Cedar Lake LRT Regional Trail.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. • <i>Visual changes:</i> The freight rail line and the trail will be shifted to the northern edge of the corridor, bringing about removal of much of the thick tree cover along the trail, and the visual impacts of the Project will be substantial. This will be a localized impact and will not adversely affect the overall community character of the area. • <i>Property conversion, acquisitions, and displacements:</i> Partial acquisition of one publicly owned parcel currently used as right-of-way for the Cedar Lake LRT Regional Trail. This acquisition are not anticipated to change the overall land use of the surrounding areas. • New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: None.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> Roadway geometric modifications near the light rail and freight rail bridge over Louisiana Ave (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> ADA-compliant curb ramps and detectable warnings will be installed at modified roadway intersections. The Cedar Lake LRT Regional Trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • Changes to vehicle parking: None.
Meadowbrook/Louisiana Station	Community Facilities	<ul style="list-style-type: none"> • Property acquisition and displacement: None. • Noise and vibration impacts: None. • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of two community facilities, but access to these facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to Isaac Walton Creekside Park, Minnehaha Creek Open Space, and St. Louis Park Police Station.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. • Visual changes: None. • Property conversion, acquisitions, and displacements: None. • New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: None.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> Roadway geometric modifications near the light rail and freight rail bridge over Louisiana Ave (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> ADA-compliant curb ramps and detectable warnings will be installed at modified roadway intersections. • Changes to vehicle parking: None.

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Lenox/Louisiana Station	Community Facilities	<ul style="list-style-type: none"> Property acquisition and displacement: None. Noise and vibration impacts: None. Changes in roadway access: None. <i>Changes to transit access:</i> Benefit of improved transit access to Freedom Park and St. Louis Park High School.
	Community Character	<ul style="list-style-type: none"> Noise and vibration impacts: None. Visual changes: None. Property conversion, acquisitions, and displacements: None. New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: None.
	Community Cohesion	<ul style="list-style-type: none"> <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. Changes to the local roadway network: None. Changes to the pedestrian and bicycle network: None. Changes to vehicle parking: None.
Brooklawn/Louisiana Station	Community Facilities	<ul style="list-style-type: none"> Property acquisition and displacement: None. Noise and vibration impacts: None. <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of some community facilities, including reconstruction of intersection at Oxford St and Edgewood Ave S; access to community facilities will be maintained. <i>Changes to transit access:</i> Benefit of improved transit access to Park Nicollet Methodist Hospital.
	Community Character	<ul style="list-style-type: none"> <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. <i>Visual changes:</i> The freight rail line and the trail will be shifted to the northern edge of the corridor, bringing about removal of much of the thick tree cover along the trail, and the visual impacts of the Project will be substantial. This will be a localized impact and will not adversely affect the overall community character of the area. <i>Property conversion, acquisitions, and displacements:</i> Full acquisition of nine industrial parcels (7.6 acres) and partial acquisition of four railroad parcels (0.2 acre). These acquisitions are not anticipated to change the overall land use of the surrounding areas. New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: None.
	Community Cohesion	<ul style="list-style-type: none"> <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. <i>Changes to the local roadway network:</i> Roadway/intersection improvements on Louisiana Ave S and Oxford Ave to provide access to the proposed Louisiana Station and park-and-ride-lot (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. <i>Changes to the pedestrian and bicycle network:</i> ADA-compliant curb ramps and detectable warnings will be installed at modified roadway intersections. <i>Changes to vehicle parking:</i> Addition of 350 park-and-ride spaces and reduction of 11 on-street parking spaces. Loss of parking will not adversely affect surrounding neighborhoods because there will be adequate parking supply to meet the needs of the existing land uses (see Section 4.3.3 for more information on parking impacts).
Sorensen/ Wooddale Station	Community Facilities	<ul style="list-style-type: none"> Property acquisition and displacement: None. Noise and vibration impacts: None. Changes in roadway access: None. <i>Changes to transit access:</i> Benefit of improved transit access to Holy Family Catholic Church, Holy Family Academy, Macedonian Evangelical Missionary Baptist Church, Lake Street Park, Park Spanish Emersion Elementary School, and Webster Park.
	Community Character	<ul style="list-style-type: none"> Noise and vibration impacts: None. Visual changes: None. Property conversion, acquisitions, and displacements: None. New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: None.

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> Roadway/intersection improvements on Wooddale Ave S (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> ADA-compliant curb ramps and detectable warnings will be installed at modified roadway intersections. • Changes to vehicle parking: None.
Elmwood/ Wooddale Station	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> The Project will result in the partial acquisition of multiple parcels used for the Cedar Lake LRT Regional Trail. The Project will not displace the trail or have a long-term effect on trail users because all existing trail connections, access points, and roadway crossings will be maintained. • Noise and vibration impacts: None. • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of each multiple community facilities (see Table 3.3-9), including expansion of lanes, new signalized intersections, and improved access at Minnesota 7 Service road. Access to these facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to Union Congregational Church Parking, Center Park, Jorvig Park, Justad Park, and the Cedar Lake LRT Regional Trail.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No severe noise impacts after mitigation. Moderate noise impacts at one building (32 units). The moderate impacts at these locations do not meet the threshold for mitigation (e.g., impact does not meet 3-decibel [dB] increase threshold) as defined by the Council's Regional Transitway Guidelines (see Appendix K). These moderate impacts will be localized and will not adversely affect the overall community character of the area. • <i>Visual changes:</i> The freight rail line and the trail will be shifted to the northern edge of the corridor, bringing about removal of much of the thick tree cover along the trail, and the visual impacts of the Project will be substantial. This will be a localized impact and will not adversely affect the overall community character of the area. • <i>Property conversion, acquisitions, and displacements:</i> Full acquisition of one railroad parcel (4.2 acres) and partial acquisition of three railroad parcels (0.1 acre). These acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> One new at-grade light rail/roadway crossing, which will be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> Roadway/intersection geometric modifications in the vicinity of the Proposed Wooddale Station (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> New grade-separated trail crossing at Wooddale Ave S and ADA-compliant curb ramps and detectable warnings at modified roadway intersections. The Cedar Lake LRT Regional Trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • Changes to vehicle parking: None.
Triangle/ Wooddale and Beltline Station	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> The Project will result in the partial acquisition of multiple parcels used for the Cedar Lake LRT Regional Trail. The Project will not displace the trail or have a long-term effect on trail users because all existing trail connections, access points, and roadway crossings will be maintained. • Noise and vibration impacts: None. • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of each of community facilities, including additional turn lanes, new access roads, a road closure, and the reconfiguration of existing roadways; access to these facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to Lilac Park, B'Nai Emet Synagogue, St. Louis Park City Hall, Police Department Headquarters, Carpenter Park, and the Cedar Lake LRT Regional Trail.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. • <i>Visual changes:</i> The freight rail line and the trail will be shifted to the northern edge of the corridor, bringing about removal of much of the thick tree cover along the trail, and the visual

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
		<p>impacts of the Project will be substantial. This will be a localized impact and will not adversely affect the overall community character of the area.</p> <ul style="list-style-type: none"> • <i>Property conversion, acquisitions, and displacements:</i> Partial acquisition of six railroad parcels (0.2 acre). These acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> One new at-grade light rail/roadway crossing, which will be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations. One new at-grade light rail crossing of the Cedar Lake LRT Regional Trail, which will be controlled by flashing lights and gates to allow for safe crossings by pedestrians and bicycles.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> New roadway turning lanes, changes in the number of through lanes, and other roadway geometric modifications in the vicinity of the proposed Beltline Station (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> New grade-separated trail bridge spanning over the LRT and freight rail tracks and Beltline Boulevard. ADA-compliant curb ramps and detectable warnings at modified roadway intersections. The Cedar Lake LRT regional trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • <i>Changes to vehicle parking:</i> Addition of 268 park-and-ride spaces and reduction of 12 on-street parking spaces. Loss of parking will not adversely affect surrounding neighborhoods because there will be adequate parking supply to meet the needs of the existing land uses (see Section 4.3.3 for more information on parking impacts).
Wolfe Park/ Wooddale and Beltline Station	Community Facilities	<ul style="list-style-type: none"> • Property acquisition and displacement: None. • Noise and vibration impacts: None. • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of some community facilities (see Table 3.3-9), but access to these facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to Park Nicollet Clinic – St. Louis Park, Bass Lake Park and Reserve; St. Louis Park Recreation Center, Arena, and Veterans Memorial Amphitheater; and Wolfe Park.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No severe impacts after mitigation. Moderate noise impacts at 16 units. The moderate impacts at these locations do not meet the threshold for mitigation (e.g., impact does not meet 3-dB increase threshold) as defined by the Council's Regional Transitway Guidelines (see Appendix K). These moderate impacts will be localized and will not adversely affect the overall community character of the area. • <i>Visual changes:</i> The freight rail line and the trail will be shifted to the northern edge of the corridor, bringing about removal of much of the thick tree cover along the trail, and the visual impacts of the Project will be substantial. This will be a localized impact and will not adversely affect the overall community character of the area. • <i>Property conversion, acquisitions, and displacements:</i> Partial acquisition of two commercial and railroad parcels (0.3 acre). These acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> One new at-grade light rail/roadway crossing, which will be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> New roadway turning lanes, changes in the number of through lanes, and other roadway geometric modifications in the vicinity of the proposed Beltline Station (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> ADA-compliant curb ramps and detectable warnings at modified roadway intersections. The Cedar Lake LRT Regional Trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • Changes to vehicle parking: None.

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Fern Hill/Beltline Station	Community Facilities	<ul style="list-style-type: none"> Property acquisition and displacement: None. Noise and vibration impacts: None. Changes in roadway access: None. <i>Changes to transit access:</i> Benefit of improved transit access to Fern Hill Park and St. George's Episcopal Church.
	Community Character	<ul style="list-style-type: none"> Noise and vibration impacts: None. Visual changes: None. Property conversion, acquisitions, and displacements: None. New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: None.
	Community Cohesion	<ul style="list-style-type: none"> <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. Changes to the local roadway network: None. Changes to the pedestrian and bicycle network: None. Changes to vehicle parking: None.
Minikahda Oaks/Beltline Station	Community Facilities	<ul style="list-style-type: none"> Property acquisition and displacement: None. Noise and vibration impacts: None. Changes in roadway access: None. Changes to transit access: None.
	Community Character	<ul style="list-style-type: none"> Noise and vibration impacts: None. Visual changes: None. Property conversion, acquisitions, and displacements: None. New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: None.
	Community Cohesion	<ul style="list-style-type: none"> <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Bass Lake Spur, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Bass Lake Spur will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. Changes to the local roadway network: None. Changes to the pedestrian and bicycle network: None. Changes to vehicle parking: None.

Source: Council, 2015.

Minneapolis

As shown in Table 3.3-16 and summarized below, there will be no adverse impacts to community facilities, community character, or community cohesion within the City of Minneapolis:

- **Community Facilities.** There are 38 community facilities within the study area in the City of Minneapolis (see Table 3.3-11 and Exhibit 3.3-5), including three public facilities (e.g., fire stations, etc.), 13 educational facilities, three places of worship, seven commercial areas, three multiuse trails, 10 park/recreation areas, and one sports stadium. Based on the measures described in Table 3.3-16, none of these facilities will be adversely affected by the Project.
- **Community Character.** Some changes in visual character directly adjacent to the proposed light rail alignment and associated improvements (e.g., roadway modifications) may occur and the acquisition of some commercial, industrial, and residential properties is anticipated. These changes will be confined to limited areas and will not adversely impact the overall community character in Minneapolis.
- **Community Cohesion.** While changes in the local roadway, pedestrian, and bicycle networks within the City of Minneapolis will occur, existing roadway and sidewalk/trail connectivity and access will be maintained or improved, and there will be no adverse impacts to community cohesion in Minneapolis.

TABLE 3.3-16

Impacts to Community Facilities, Community Character, and Community Cohesion – Minneapolis

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
West Calhoun/West Lake Station	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> The Project will result in the partial acquisition of multiple parcels used for the Cedar Lake LRT Regional Trail and one partial acquisition of a parcel used for the Midtown Greenway. The Project will not displace either trail or have a long-term effect on trail users because all existing trail connections, access points, and roadway crossings will be maintained. • <i>Noise and vibration impacts:</i> None. • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of multiple community facilities (see Table 3.3-11), including the reconfiguration of lane widths and creation of a new street. Access to all community facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to Minneapolis Chain of Lakes Regional Park and Kenilworth Trail.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. • <i>Visual changes:</i> Much of the thick tree cover along the trail will be removed, but these visual impacts will be low. Visual impacts will be localized impact and will not adversely affect the overall community character of the area. • <i>Property conversion, acquisitions, and displacements:</i> Partial acquisition of 11 commercial and railroad parcels (1.0 acre). These acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> None.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Kenilworth Corridor, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Kenilworth Corridor will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> Reconfiguration of lane widths, modification of roadway alignments, and other roadway/geometric modifications (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> New stairs and ramps to make the connection between existing facilities and station, enhanced pedestrian connections along West Lake St between Drew Ave S and Market Plaza and along Excelsior Blvd between Market Plaza and West 32nd St. ADA-compliant curb ramps and detectable warnings at modified roadway intersections. The Kenilworth Trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • <i>Changes to vehicle parking:</i> Net loss of 80 on-street parking spaces (loss of 97 at one location and addition of 17 at another location). Loss of parking will not adversely affect surrounding neighborhoods because there will be adequate parking supply to meet the needs of the existing land uses (see Section 4.3.3 for more information on parking impacts).
Cedar Isles Dean/West Lake and 21st Street Stations	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> The Project will result in the partial acquisition of one parcel used for the Midtown Greenway. The Project will not displace the trail or have a long-term effect on trail users because all existing trail connections, access points, and roadway crossings will be maintained. • <i>Noise and vibration impacts:</i> No adverse impacts to the Kenilworth Channel after mitigation • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of multiple community facilities (see Table 3.3-11), including a new roadway and trail signal and an intersection reconstruction; access to these facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to the Minneapolis Chain of Lakes Regional Park, Kenilworth Trail, Alcott Triangle, and Park Siding Park.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No severe noise impacts after mitigation. Moderate noise impacts at 8 units. The moderate impacts at these locations do not meet the threshold for mitigation (e.g., impact does not meet 3-dB increase threshold) as defined by the Council's Regional Transitway Guidelines (see Appendix K). These moderate impacts will be localized and will not adversely affect the overall community character of the area. • <i>Visual changes:</i> Substantial level of impact on multiple representative viewpoints within this area. Visual impacts associated with the Project include those related to vegetation removal, relocation of the existing freight rail tracks, relocation of trails, and the addition of an LRT station. The crossing of the Kenilworth Channel will require construction of new bridge structures. In the transition areas between the at-grade and below-grade segments, there will be substantial visual impacts because of the extensive tree clearing required to accommodate the Project and the visual dominance of the trenches and the concrete retaining walls they will require. As a mitigation, the Council will implement the Visual Quality Design Guidelines for Key Structures (Council, 2015 – refer to Appendix C to access the Guidelines). The Project will also include

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Kenwood/21st Street and Penn Stations		<p>mitigation measures identified in Section 3.7.4. Considering these mitigation measures, the Project will not adversely affect the overall visual quality of the neighborhood.</p> <ul style="list-style-type: none"> • <i>Property conversion, acquisitions, and displacements:</i> Full acquisition of five commercial, industrial, and railroad parcels (5.5 acres) and partial acquisition of eight commercial and residential parcels (0.5 acre). There will be no residential displacements, and these acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> None.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Kenilworth Corridor, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Kenilworth Corridor will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> Reconstruction of existing intersection and at Cedar Lake Parkway and other roadway/intersection geometric modifications (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> New trail crossing improvements at Cedar Lake Parkway. ADA-compliant curb ramps and detectable warnings at modified roadway intersections. The Kenilworth Trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • <i>Changes to vehicle parking:</i> None.
	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> The Project will result in the partial acquisition of multiple parcels used for the Kenilworth Trail. The Project will not displace the trail or have a long-term effect on trail users because all existing trail connections, access points, and roadway crossings will be maintained. • <i>Noise and vibration impacts:</i> No adverse impacts after to the Kenilworth Channel after mitigation. • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of multiple community facilities (see Table 3.3-11), including a new roadway and trail signal and an intersection reconstruction; access to these facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to Kenwood Elementary, Performing Arts Magnet, Kenwood Park, Lake of the Isles Lutheran Church, Minneapolis Chain of Lakes Regional Park, and the Cedar Lake LRT Regional Trail.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. • <i>Visual changes:</i> Substantial level of impact on multiple representative viewpoints within this area. Visual impacts associated with the Project include those related to vegetation removal, relocation of the existing freight rail tracks, relocation of trails, and the addition of an LRT station. The crossing of the Kenilworth Channel would require construction of new bridge structures. In the transition areas between the at-grade and below-grade segments, there will be substantial visual impacts because of the extensive tree clearing required to accommodate the Project and the visual dominance of the trenches and the concrete retaining walls they will require. As a mitigation, the Council will implement the Visual Quality Design Guidelines for Key Structures (Council, 2015 – refer to Appendix C to access the Guidelines). The Project will also include mitigation measures identified in Section 3.7.4. Considering these mitigation measures, the Project will not adversely affect the overall visual quality of the neighborhood. • <i>Property conversion, acquisitions, and displacements:</i> Partial acquisition of eight railroad and residential parcels. There will be no residential displacements and these acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> One new at-grade light rail/roadway crossing, which will be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Kenilworth Corridor, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Kenilworth Corridor will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> Reconstruction of the 21st St roadway/light rail and freight crossing and other roadway/intersection geometric modifications (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> New trail crossing improvements northeast of 21st St at the at-grade LRT crossing of the Kenilworth Trail. ADA-compliant curb ramps and detectable warnings at modified roadway intersections. The Kenilworth Trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • <i>Changes to vehicle parking:</i> None.

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Bryn-Mawr/Penn and Van White Stations	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> The Project will result in the partial acquisition of multiple parcels used for the Cedar Lake Trail. The Project will not displace the trail or have a long-term effect on trail users because all existing trail connections, access points, and roadway crossings will be maintained. • <i>Noise and vibration impacts:</i> None • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of multiple community facilities (see Table 3.3-11), including the reconfiguration of lane widths, removal of a turn lane, and the creation of a new access road; access to these facilities will be maintained. • <i>Changes to transit access:</i> Benefit of improved transit access to Bryn Mawr Meadows Park, Bryn Mawr Elementary, Anwatin Middle School, and Cedar Lake Trail.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> No adverse impacts after mitigation. • <i>Visual changes:</i> None. • <i>Property conversion, acquisitions, and displacements:</i> Partial acquisition of four commercial and railroad parcels (0.1 acre). These acquisitions are not anticipated to change the overall land use of the surrounding areas. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> One new at-grade light rail crossing of the Cedar Lake Trail, which will include signage and pavement markings to allow for safe crossings by pedestrians and bicycles.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Wayzata Subdivision, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Wayzata Subdivision will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> Reconfiguration of turning lanes, changes in the number of through lanes, and other roadway geometric modifications in the vicinity of the proposed Van White Station (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> New elevators, stairs, and ramps to make the connection between existing facilities and Penn Station. Enhanced pedestrian connections from Penn Station across I-394 and north to Mount View Ave. Additional sidewalks along the south side of Wayzata Blvd from the I-394 pedestrian bridge at Thomas Ave to the access to Penn Station. Light and sign improvements along Cedar Lake Trail. New sidewalk improvements along Dunwoody Blvd. New pedestrian bridge to Bryn Mawr Meadows (replacing the existing trail bridge). ADA-compliant curb ramps and detectable warnings at modified roadway intersections. The Cedar Lake Trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • <i>Changes to vehicle parking:</i> Reduction of 25 on-street parking spaces in the vicinity of the proposed Van White Station. Loss of parking will not adversely affect surrounding neighborhoods because there will be adequate parking supply to meet the needs of the existing land uses (see Section 4.3.3 for more information on parking impacts).
Harrison/Penn and Van White Stations	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> None. • <i>Noise and vibration impacts:</i> None. • <i>Changes in roadway access:</i> None. • <i>Changes to transit access:</i> Benefit of improved transit access to Bassett Creek Valley Park.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> None. • <i>Visual changes:</i> None. • <i>Property conversion, acquisitions, and displacements:</i> None. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> None.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Wayzata Subdivision, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Wayzata Subdivision will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> None. • <i>Changes to the pedestrian and bicycle network:</i> None. • <i>Changes to vehicle parking:</i> None.
Sumner Glenwood/Van White Stations	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> None. • <i>Noise and vibration impacts:</i> None. • <i>Changes in roadway access:</i> Some roadway modifications within the general vicinity of each of community facilities, including modification of a two-lane roadway to a three-lane roadway; access to these facilities will be maintained.

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
		<ul style="list-style-type: none"> • <i>Changes to transit access:</i> Benefit of improved transit access to Sumner Park.
	Community Character	<ul style="list-style-type: none"> • Noise and vibration impacts: None. • Visual changes: None. • Property conversion, acquisitions, and displacements: None. • New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: None.
	Community Cohesion	<ul style="list-style-type: none"> • New physical barriers: Light rail alignment will be located adjacent to the existing Wayzata Subdivision, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Wayzata Subdivision will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • Changes to the local roadway network: None. • Changes to the pedestrian and bicycle network: None. • Changes to vehicle parking: None.
Lowry Hill/Penn and Van White Stations	Community Facilities	<ul style="list-style-type: none"> • Property acquisition and displacement: The Project will result in the partial acquisition of multiple parcels used for the Cedar Lake Trail. The Project will not displace the trail or have a long-term effect on trail users because all existing trail connections, access points, and roadway crossings will be maintained. • Noise and vibration impacts: None. • Changes in roadway access: Some roadway modifications within the general vicinity of multiple community facilities (see Table 3.3-11), including the reconfiguration of lane widths, removal of a turn lane, and the creation of a new access road; access to these facilities will be maintained. • Changes to transit access: Benefit of improved transit access to St. Paul's Episcopal Church, The Parade, Thomas Lowry Park, Blake School Northrup Campus, Dunwoody Institute, Basilica of St. Mary, Minneapolis Chain of Lakes Regional Park, and Cedar Lake Trail.
	Community Character	<ul style="list-style-type: none"> • Noise and vibration impacts: No adverse impacts after mitigation. • Visual changes: None. • Property conversion, acquisitions, and displacements: None. • New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: None.
	Community Cohesion	<ul style="list-style-type: none"> • New physical barriers: Light rail alignment will be located adjacent to the existing Wayzata Subdivision, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Wayzata Subdivision will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • Changes to the local roadway network: Reconfiguration of turning lanes, changes in the number of through lanes, and other roadway geometric modifications in the vicinity of the proposed Van White Station (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • Changes to the pedestrian and bicycle network: Light and sign improvements along Cedar Lake Trail. New sidewalk improvements along Dunwoody Blvd. ADA-compliant curb ramps and detectable warnings at modified roadway intersections. The Cedar Lake Trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • Changes to vehicle parking: None.
North Loop/Royalston Station	Community Facilities	<ul style="list-style-type: none"> • Property acquisition and displacement: None. • Noise and vibration impacts: None. • Changes in roadway access: Some roadway modifications within the general vicinity of multiple community facilities (see Table 3.3-11), including the reconfiguration of lane widths, replacement of an existing bridge, modification of four-lane roadways to two-lane roadways, intersection reconstructions, and a new traffic signal. Access to the Minneapolis Farmers Market and other facilities will be maintained. • Changes to transit access: Benefit of improved transit access to Target Field, Ubah Medical Academy Charter School, Minnesota International Middle Charter School, Twin Cities International Elementary, Minnesota Farmers Market, and Cedar Lake Trail.
	Community Character	<ul style="list-style-type: none"> • Noise and vibration impacts: No adverse impacts after mitigation. • Visual changes: Low level of impact on representative viewpoint within this area. • Property conversion, acquisitions, and displacements: Partial acquisition of nine commercial, industrial, and railroad parcels (3.1 acres). These acquisitions are not anticipated to change the overall land use of the surrounding areas. • New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: Two new at-grade light rail/roadway crossings, which will be controlled by traffic signals, flashing lights, and gates

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
		to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Wayzata Subdivision, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Wayzata Subdivision will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> Reconfiguration of turning lanes, changes in the number of through lanes, and other roadway geometric modifications in the vicinity of the proposed Royalston Station (see Appendix E for a more detailed description of the changes to the local roadway network). All existing roadway connections will be maintained. • <i>Changes to the pedestrian and bicycle network:</i> Enhanced pedestrian connections to the Farmers Market, from both the north and south, via the frontage road and Holden Ave and Border Ave. ADA-compliant curb ramps and detectable warnings at modified roadway intersections. The Cedar Lake Trail will be reconstructed and will maintain existing connectivity. All existing sidewalk and trail connections will be maintained. • <i>Changes to vehicle parking:</i> Net loss of 33 on-street parking spaces (gain of 45 new spaces and loss of 78 spaces). Loss of parking will not adversely affect surrounding neighborhoods because there will be adequate parking supply to meet the needs of the existing land uses (see Section 4.3.3 for more information on parking impacts).
Downtown West/Royalston and Target Field Station ^a	Community Facilities	<ul style="list-style-type: none"> • <i>Property acquisition and displacement:</i> None. • <i>Noise and vibration impacts:</i> None. • <i>Changes in roadway access:</i> None. • <i>Changes to transit access:</i> Benefit of improved transit access to the Fair School – Downtown, Orpheum Theater, State Theater, Pantages Theater, First Avenue/7th Street Entry, and Augsburg Academy for Health Careers.
	Community Character	<ul style="list-style-type: none"> • <i>Noise and vibration impacts:</i> None. • <i>Visual changes:</i> None. • <i>Property conversion, acquisitions, and displacements:</i> None. • <i>New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:</i> None.
	Community Cohesion	<ul style="list-style-type: none"> • <i>New physical barriers:</i> Light rail alignment will be located adjacent to the existing Wayzata Subdivision, which is an active freight rail corridor (refer to Exhibit 2.1-5). All existing sidewalk, trail, and roadway crossings of the Wayzata Subdivision will be maintained, and, because the existing freight rail alignment is currently a physical barrier, the Project will not create a new physical barrier. • <i>Changes to the local roadway network:</i> None. • <i>Changes to the pedestrian and bicycle network:</i> None. • <i>Changes to vehicle parking:</i> None.

^a Target Field Station is an existing light rail station that will connect to the Southwest LRT Project.

Source: Council, 2015.

3.3.3.2 Long-term Indirect Impacts on Neighborhoods and Communities

Long-term indirect impacts related to the Project that could affect access to community facilities, community character, and community cohesion generally include property conversion related to station area development, and increased demand for parking in the neighborhoods surrounding proposed stations.

The Project has the potential to result in indirect impacts related to property conversion in the areas surrounding proposed light rail stations. In particular, light rail lines can advance the timing and increase the intensity of private and public development surrounding proposed station areas (see Section 3.1.3.2 for more information on station area development). Any development/redevelopment would be in accordance with applicable city plans and policies, which were developed, in part, based on the desires of neighborhood and community residents. As a result, potential property conversion surrounding proposed station will not have an adverse effect on community facilities, community character, or community cohesion.

The Project could also affect the supply of and demand for off-street and on-street parking in the areas surrounding the proposed light rail stations, as a result of station area development/ redevelopment. Any development would, however, be required to comply with the parking requirements of the local jurisdiction,

which would tend to ensure a long-term balance of parking supply and demand (see Section 3.1.3.2 for more information on potential station area development).

In addition, planned park-and-ride lots under the Project have been sized to cumulatively meet forecast (2040) demand for park-and-ride spaces, which will help to minimize “spillover” or unwanted parking in neighborhoods adjacent to proposed light rail stations. Therefore, no adverse effects to community facilities, community character, or community cohesion related to changes in the supply of vehicle parking are expected.

3.3.3.3 Short-term Impacts on Neighborhoods and Communities

Access to Community Facilities

The Project will result in short-term direct and indirect changes to access to community facilities during construction. Short-term impacts include changes to roadways alignments, intersections modifications, and trail and sidewalk detours for routes which provide access to community facilities (see Sections 4.2.3.3 and 4.5.3.3 for more information on temporary construction impacts to roadways and pedestrian/bicycle facilities, respectively). Depending on conditions (e.g., levels of traffic), at times these construction activities will likely result in delays and longer travel times/distances for people using the facilities. In addition, the creation of temporary construction easements on the property of community facilities will be required in cases where short-term excavation and construction disturbance are anticipated. Construction activities within temporary easements on community facilities properties may cause temporary inconveniences to users of these facilities as a result of construction-generated noise, dust, and congestion. Access to community facilities will be maintained during construction.

Community Character

Construction impacts, such as increased levels of noise and dust, may temporarily affect neighborhood character at times of heavy construction, primarily in areas that are relatively quiet. In addition, the presence of large construction equipment may be perceived as visually disruptive, resulting in temporary effects to community character, particularly for residential neighborhoods adjacent to the limits of disturbance for the Project (see Appendix E). The following are neighborhoods directly adjacent to the Project’s limits of disturbance (see Exhibits 3.3-1 and 3.3-5):

- Residential neighborhood west of SouthWest Station (Eden Prairie)
- Residential neighborhood north of Opus Station (Minnetonka)
- Residential neighborhood north of Shady Oak Station (Hopkins)
- Residential neighborhood north of Downtown Hopkins Station (Hopkins)
- South Oak Hill (St. Louis Park)
- Wolfe Park (St. Louis Park)
- Triangle (St. Louis Park)
- West Calhoun (Minneapolis)
- Cedar-Isles-Dean (Minneapolis)
- Kenwood (Minneapolis)

Community Cohesion

Although temporary in nature, short-term (construction) impacts may affect community cohesion. Construction activities could result in increased roadway congestion, temporary closures of roadways, and roadway detours, all of which may increase both automobile and truck traffic through residential neighborhoods. Construction activities could also result in temporary increases in vehicle traffic on local roadways where relatively little vehicle traffic exists today. Roadways which provide connectivity to and from neighborhoods are of particular importance to community cohesion. Table 3.3-17 identifies short-term construction impacts for key roadways.

TABLE 3.3-17
Short-term Roadway Construction Impacts^a

Location	City	Neighborhood ^b	Summary of construction impacts
Technology Drive, west of Prairie Center Drive	Eden Prairie	SouthWest Station area	Temporary lane closure/shifts to facilitate roadway widening and reconstruction, and track, signal and utility construction activities
Excelsior Boulevard, at 17th Ave S, 8th Ave S, and Jackson Ave N/Milwaukee St	Hopkins	Shady Oak and Downtown Hopkins Station areas	Temporary lane closures/shifts to facilitate intersection reconstruction, turn lane widening, utility construction, and LRT bridge construction
Blake Road, in the area of the at-grade LRT alignment crossing	Hopkins	Blake Station Area	Temporary lane closures/shifts to facilitate the construction of the at-grade, gated light rail, freight rail, and trail crossing reconstruction
Louisiana Ave S, in the area of the at-grade LRT alignment crossing	St. Louis Park	South Oak Hill and Meadowbrook	Temporary lane closures /shifts to facilitate the reconstruction of the light rail, freight rail, and trail bridges
West Lake Street, in the area of the at-grade LRT alignment crossing	Minneapolis	West Calhoun	Temporary lane closures/shifts to add barrier and sidewalk on the existing bridge over the Kenilworth Corridor
Cedar Lake Pkwy, in the area of the existing Kenilworth Corridor crossing	Minneapolis	Cedar-Isles-Dean	Temporary lane closures/shifts to facilitate the construction of the light rail tunnel, and at-grade freight rail /trail crossings

^a Includes a summary of construction activities of note when considering effects to community cohesion. Does not represent an all-inclusive list of construction activities.

^b For the purpose of this analysis, station areas (i.e., ½-mile radius around proposed LRT stations) was used to describe neighborhoods for communities with no formally defined neighborhood boundaries (refer to Section 3.3.1 for more information).

Source: Council, 2015.

Temporary sidewalk closures and detours may affect pedestrian traffic patterns and temporary trail closures or detours during construction would likely be required, but these would be short-term (construction) effects. Refer to Sections 4.2.3.3 and 4.5.3.3 for more information on short-term (construction) impacts related to roadways and traffic, and pedestrian and bicycle facilities, respectively.

3.3.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term direct and indirect neighborhood and community impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Sections 3.3.3.1, 3.3.3.2, and 3.3.3.3 for additional information on the identified neighborhood and community impacts and avoidance measures).

3.3.4.1 Long-term Mitigation Measures

No mitigation measures are warranted for long-term neighborhood and community impacts, because there will be no adverse impacts due to the effectiveness of mitigation measures that have been identified and will be implemented for specific environmental categories (including but not limited to noise, vibration, visual quality and aesthetics, transit, roadways and traffic, parking, and pedestrian and bicycle). Specific mitigation for the long-term impacts such as property acquisitions and displacements, visual quality, and noise are discussed in other sections of this Final EIS (i.e., Acquisitions and Displacements [Section 3.4], Parklands, Recreation Areas, and Open Spaces [Section 3.6], Visual Quality and Aesthetics [Section 3.7], Noise [Section 3.12], Vibration [Section 3.13], Parking [Section 4.3], and Pedestrian and Bicycle [Section 4.5]).

3.3.4.2 Short-term Mitigation Measures

Impact. The Project will result in short-term changes to access to community facilities during construction. Short-term impacts include changes to roadways alignments, intersections modifications, and trail and sidewalk detours for routes which provide access to community facilities (see Sections 4.2.3.3 and 4.5.3.3 for more information on temporary construction impacts to roadways and pedestrian/bicycle facilities, respectively).

Impact. Construction impacts, such as increased levels of noise, vibration, and dust may temporarily affect neighborhood character at times of heavy construction, primarily in areas that are relatively quiet. In addition, the presence of large construction equipment may be perceived as visually disruptive, resulting in temporary effects to community character, particularly for residential neighborhoods adjacent to the limits of disturbance for the Project (see Appendix E).

Impact. Construction activities could result in short term impacts to community cohesion, such as increased roadway congestion, temporary closures of roadways, and roadway detours, all of which may increase both automobile and truck traffic through residential neighborhoods. Construction activities could also result in temporary increases in vehicle traffic on local roadways where relatively little vehicle traffic exists today.

Mitigation. Specific mitigation measures for short-term impacts to land use related to temporary construction easements and other construction activities will be identified in the Construction Mitigation Plan and Construction Communication Plan, which will be implemented by the Council prior to and during construction. The purpose of the Construction Communication Plan is to prepare project-area residents, businesses, and commuters for construction; listen to their concerns; and develop plans to minimize harmful or disruptive effects. Specific mitigation measures included in the Construction Communication Plan will be site specific and may include the following:

- Issue construction updates and post them on the Project website.
- Provide advance notice of roadway closures, driveway closures, and utility shutoffs.
- Conduct public meetings.
- Establish a 24-hour construction hotline.
- Prepare materials with applicable construction information.
- Address property access issues.
- Assign staff to serve as liaisons between the public and contractors during construction.

In addition, the Council will develop and implement a construction staging plan (staging plan), which will be reviewed with the appropriate jurisdictions and railroads, and the contractor will be required to secure the necessary permits and follow the staging plan, unless otherwise approved. Components of a staging plan include traffic management plans and a detailed construction timeline.

3.4 Acquisitions and Displacements

This section describes the long-term direct and indirect effects and short-term (construction) direct and indirect effects of the Project related to acquisitions and displacements. This section includes the identification of the parcels of land that will be permanently acquired for the Project and the displacements associated with those acquisitions, as well as the temporary easements that will be acquired for construction (see Section 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis; an assessment of existing built environment; a description of the anticipated impacts related to acquisitions and displacements; and a description of mitigation measures to implement with the Project. A complete listing of acquisitions related to the Project is included in the *Southwest LRT Acquisitions Technical Report* (refer to Appendix C for instructions on how to access this document).

3.4.1 Regulatory Context and Methodology

Federal and state laws require that when property is acquired for a public project that property owners be paid fair market value for their land and buildings and, where applicable, be assisted in finding replacement sites for business or residential dwellings. In addition, any tenant of the property to be acquired is required to receive relocation assistance, if desired. Any property acquired for the Project will be acquired in accordance with the Uniform Relocation and Real Property Acquisitions Policies Act of 1970, as amended, (42 U.S.C. 4601 et seq.), which also is known as the Uniform Relocation Act. The objective of the Uniform Relocation Act is to provide fair and equitable treatment of people whose real property is acquired or who are displaced in connection with federally funded projects; help ensure that relocation assistance is provided; and help ensure that decent, safe, and sanitary housing is available within the displaced person's

financial means. Property acquired for the Project will also be subject to MN Stat. 117 which sets forth requirements for acquisition of land (MN Stat. 117.38), compensation (MN Stat. 117.155 – 117.187), and uniform relocation benefits (MN Stat. 117.52).¹⁹ The Uniform Relocation Act and MN Statutes are applicable to full and partial acquisitions, displacement, and permanent and temporary easements.²⁰ The property acquisition process for the Project will follow the *Southwest LRT Project Real Estate Acquisition and Management Plan* (Council and MnDOT, 2014), which will be maintained during final design and construction.

The study area for the acquisitions and displacements analysis is the Project's limits of disturbance, which is inclusive of the Project's permanent and temporary right-of-way requirements.²¹ See Appendix E for an illustration of the Project's limits of disturbance (LOD). Aerial photography, project engineering design, and county land parcel data were used to determine the properties or portions of properties, within the Project's LOD and to determine the extent of impact on each property. For partial acquisitions, a determination was made whether acquisition would affect the use of the property as currently designed and/or whether modifications to the property would be required to maintain use.

3.4.2 Affected Environment

As described in Section 3.1, the study area is an urban/sub-urban area comprising a mix of uses including residential, commercial, industrial and institutional uses. Mapping showing the existing land use conditions within the LOD is provided in Section 3.1.

Beginning in the City of Hopkins, and continuing to its terminus at Target Field Station in Minneapolis, the proposed light rail alignment will be located within three active existing freight rail and recreation corridors (refer to Exhibit 4.4-1 in Section 4.4 Freight [Rail and Truck]): the Bass Lake Spur; the Cedar Lake Junction (locally referred to as the Kenilworth Corridor); and the Wayzata Subdivision. Refer to Section 4.4.3.1 for a description of the current ownership and use of each of these freight rail corridors.

The specific regulations associated with parkland acquisition are described in Section 3.6 and in Appendix J, Section 4(f) Evaluation. Utilities and potential utility relocations are discussed in Section 3.15 and existing freight operations and ownership of freight rail corridors are described in Section 4.4.

3.4.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts that will result from the need to acquire land to implement the Project.

3.4.3.1 Long-term Direct Acquisitions and Displacements

Based on the Project's preliminary engineering plans (see Appendix E), the Project will directly result in the partial acquisition of 159 parcels (totaling approximately 133.5 acres) and full acquisition of 36 parcels (totaling approximately 64 acres). Of these, 145 parcels (totaling approximately 126 acres) are private

¹⁹ Land acquisitions for Locally Requested Capital Investments (LRCIs) may not include federal funding and therefore may not be subject to the requirements of the Uniform Relocation Act. Acquisitions for LRCIs would still be subject to MN Stat. 117. Acquisitions for LRCIs will generally follow the same process as non-LRCI Project acquisitions, unless otherwise noted in the *Southwest LRT Project Real Estate Acquisition and Management Plan*.

²⁰ *Fee simple* means property is fully acquired with change in ownership; *permanent easement* means the right to use the property permanently for a specific purpose is acquired but original ownership remains; *temporary easement* means the right to use the property for specific purpose and a specified time period is granted but original ownership remains. Refer to the *Southwest LRT Acquisitions Technical Report* for more detailed definitions of these types of real estate transactions (instructions on how to access this document can be found in Appendix C).

²¹ Temporary right-of-way, or temporary easements, includes land needed temporarily for construction activities, such as construction staging, construction access roads, and storage yards, which will be removed after construction is finished. Refer to Section 3.4.3.3 for more information on temporary right-of-way acquisitions.

property and 50 parcels (totaling approximately 71.5 acres) are currently under public ownership.^{22,23,24} The existing land use of properties that will be acquired includes railroad (public and privately owned), industrial, commercial, residential, and open space. Refer to Section 3.1 for more information on the conversion of existing land uses to public transportation use. The number of full and partial acquisitions, by land use type, are shown in Table 3.4-1. The locations of these partial and full parcel acquisitions are illustrated on Exhibits 3.4-1 and 3.4-2. A detailed table showing the name, Hennepin County property ID, location, ownership type (i.e., private or public), type of acquisition (e.g., full or partial), and size of impacted parcels is included in the *Southwest LRT Acquisitions Technical Report* (Technical Report) (refer to Appendix C).

TABLE 3.4-1

Permanent Acquisitions under the Project^a

Type of Permanent Acquisition	Number of Parcels	Acres
Private Property Right-of-Way Acquisitions – Partial ^b	117	71.4
Private Property Right-of-Way Acquisitions – Full	28	54.6
Public Property Right-of-Way Acquisitions – Partial	42	62.1
Public Property Right-of-Way Acquisitions – Full	8	9.0
Total	195	197.1

^a Acquisitions quantities are approximate and may change as a result of implementation of the property acquisition process.

^b As described in Section 2.1.1, the Eden Prairie Town Center Station and associated roadway improvements are deferred and are not expected to be in place when the Project opens in 2020. The station and associated roadway improvements are planned to be in place by 2040. If the station and associated roadway improvements are not in place by 2040, there would be a reduction of six partial acquisitions of private property (totaling 1.23 acres) in the vicinity of the station and the number of private parcels acquired by the Project would be 111 parcels (totaling approximately 70 acres), rather than 117 parcels (totaling approximately 71 acres).

Source: Council, 2015

Of the land to be acquired, approximately 49 tax parcels are currently used as an existing railroad corridor (i.e., Bass Lake Spur, Kenilworth Corridor, and Wayzata Subdivision) and reserved for transportation use. Of the 49 parcels, there are 17 parcels of privately owned property within the Bass Lake Spur and Wayzata Subdivisions and 32 parcels of public property currently owned by HCRRA within the Kenilworth Corridor. Final ownership of these rights-of-way will be determined as Engineering progresses, but it is likely that portions of the railroad corridors will be transferred to public ownership, with continued operating rights for the railroads that currently operate in the area.

The full or partial acquisition of property with industrial and commercial uses will result in the relocation of up to 72 businesses that currently operate on or use 20 of the parcels to be acquired by the Project.

Depending on the preferences of the owner, the Project would work to relocate displaced businesses in accordance with the Uniform Relocation Act.

²² Partial acquisitions include four privately owned parcels related to Locally Requested Capital Investments (LRCIs), which are not part of the LPA (see Section 2.1.1). These four parcels would already be partially acquired as a result of the LPA, but the partial acquisition area will be larger as a result of the LRCIs. One full acquisition of a privately owned parcel is attributed to the LRCIs. Refer to the *Southwest LRT Acquisitions Technical Report* (see Appendix C) for more information.

²³ As described in Section 2.1.1, the Eden Prairie Town Center Station and associated roadway improvements are deferred and are not expected to be in place when the Project opens in 2020. The station and associated improvements are planned to be in place by 2040. If the station and associated improvements are not in place by 2040, there would be a reduction of partial acquisitions of private property (totaling 1.23 acres) in the vicinity of the station by 2040, and thus the number of private parcels acquired by the Project would be 141 parcels (totaling approximately 122 acres), rather than 143 parcels (totaling approximately 126 acres).

²⁴ These acquisitions will consist of fee simple acquisitions, permanent easements, or a combination of fee simple acquisition and permanent easement. Decisions regarding the type(s) of acquisition used for each parcel will be made during Engineering and will be determined prior to initiating the acquisition process. Project acquisition quantities are approximate and may change as a result of implementation of the property acquisition process.

EXHIBIT 3.4-1 Property Acquisitions

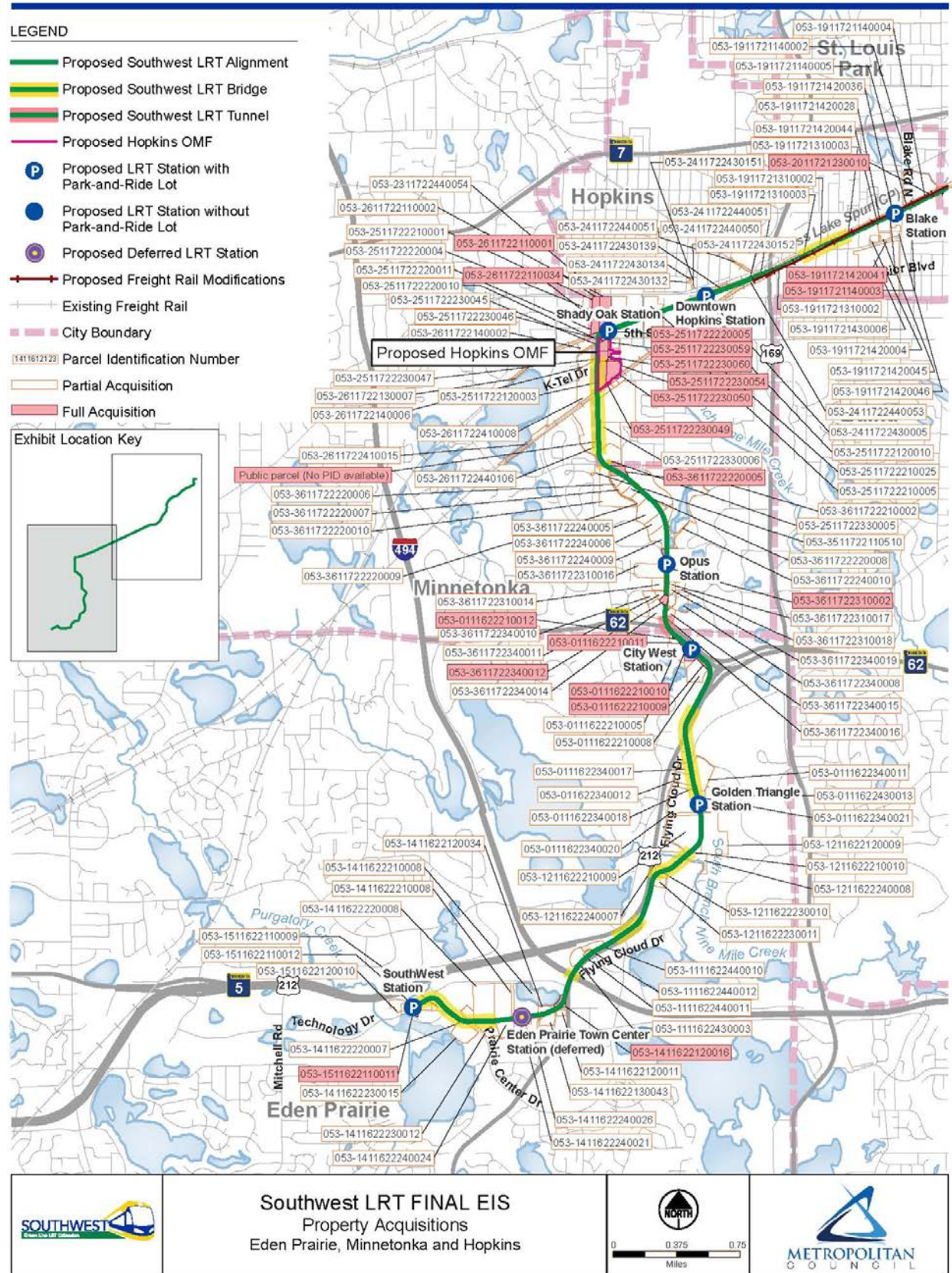
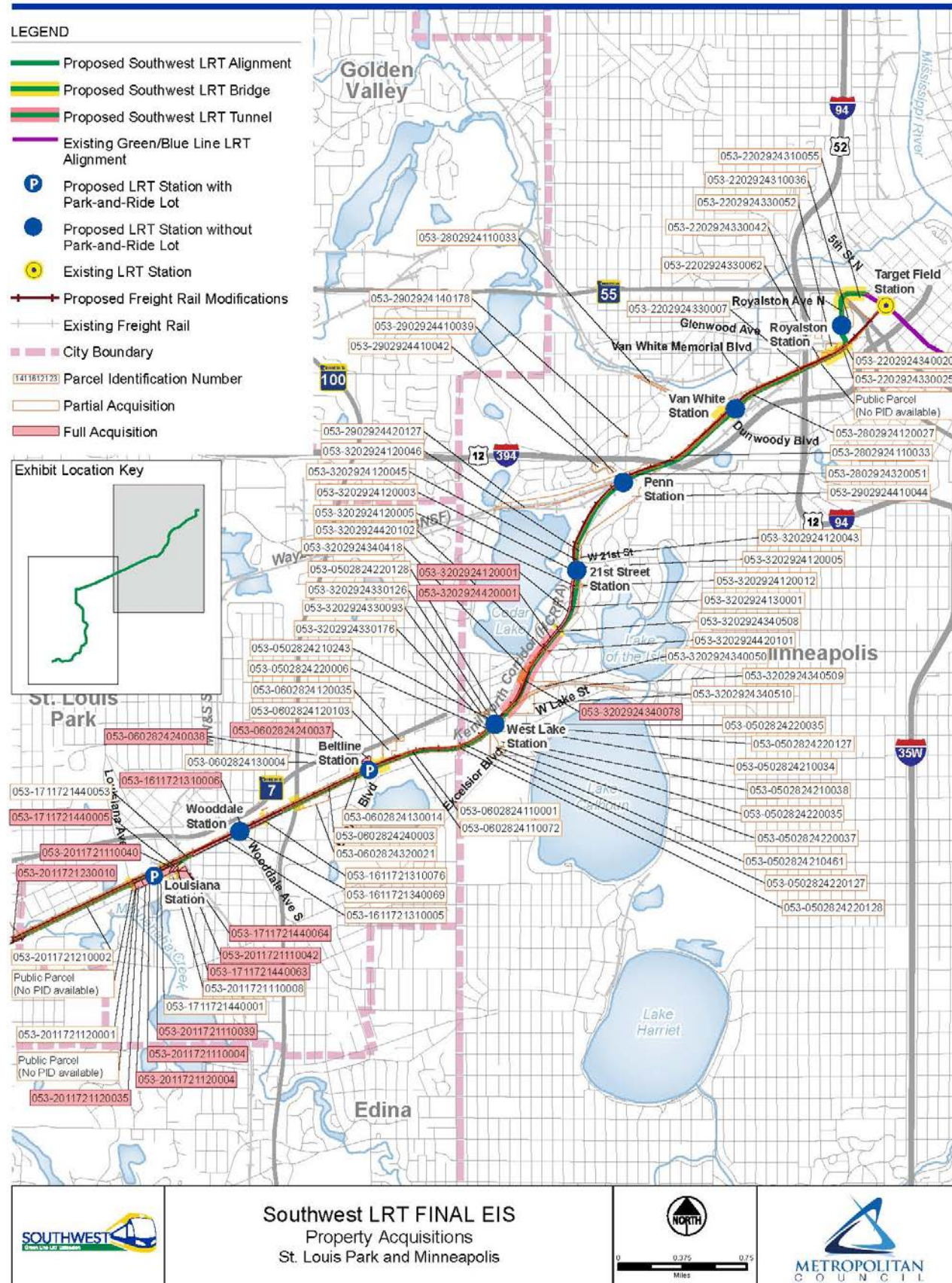


EXHIBIT 3.4-2

Property Acquisitions



The Project would not result in any residential displacement. However, a combined total of approximately 68 acres of land would be acquired from a total of 27 residential parcels, which are currently occupied by multiple condominiums and apartment complexes. These partial acquisitions will generally involve the purchase of a small strip of land along an edge of the parcel and those acquisitions are not expected to lead to the displacement of any occupied residential structures.

3.4.3.2 Long-term Indirect Acquisitions and Displacements

As noted in Section 3.1.3.2, there is potential for increased development and redevelopment in areas surrounding proposed light rail stations because of improved transit access. While development and redevelopment is regulated by the affected local jurisdictions and is driven by regional and local economic conditions, light rail lines can advance the timing and increase the intensity of development, within the limits allowed by local comprehensive plans, particularly surrounding proposed station areas. This increased redevelopment could indirectly lead to acquisitions and displacements in situations where property ownership is transferred from one party to another.

3.4.3.3 Short-term Acquisitions

Short-term impacts related to acquisitions and displacements generally occur when a temporary property easement is needed for construction activities outside of the permanent right-of-way for the Project.

Temporary property acquisitions could include short-term changes to property access or temporary conversion of land use to transportation use for construction staging and other construction activities throughout all or part of the construction period. Short-term occupancies of parcels would include the use of construction easements or intergovernmental agreements and would change existing land uses in the short term. Although some businesses may experience hardship during construction, this would not affect displacement unless the property or business owner relocated due to hardships faced during construction.

Based on the Project's preliminary engineering plans, temporary property acquisitions (e.g., construction easements) will be needed on approximately 134 acres effecting 178 parcels including those with industrial, commercial, railroad, residential, and public land uses.²⁵ Refer to Appendix E for a series of maps showing the Project's temporary easements.

In addition, some of the property acquired by the Project, as identified in Table 3.4-1, may not be needed after construction is complete. Those unneeded areas of property would be identified after construction and would be considered as remnant parcels. Remnant parcels could be sold in compliance with FTA Circular 5010.1D (FTA, 2008a) and applicable state regulations, thereby changing acquisition impacts to these parcels from long-term impacts to short-term impacts.

3.4.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term acquisition and displacement impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Sections 3.4.3.1, 3.4.3.2, and 3.4.3.3 for additional information on the identified acquisition and displacement impacts and avoidance measures).

3.4.4.1 Long-term and Short-term Mitigation Measures

Long-term Impact. The Project will directly result in the partial acquisition of 159 parcels (totaling approximately 133.5 acres) and full acquisition of 36 parcels (totaling approximately 64 acres).

Short-term Impact. Temporary property acquisitions (e.g., construction easements) will be needed on approximately 134 acres effecting approximately 178 parcels.

²⁵ Includes 0.146 acre of temporary easements on two parcels related to Locally Requested Capital Investments (LRCIs), which are not part of the LPA (see Section 2.1.1). Refer to the Southwest LRT Acquisitions Technical Report (see Appendix C) for more information.

Mitigation. When acquiring property, the Council will provide property owners with monetary compensation in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Relocation Act), FTA's Circular 5010.1D Grants Management, and MN Stat. 117. Any businesses or persons displaced from the property will be compensated in accordance with provisions of the Uniform Relocation Act and MN Stat. 117.

Relocation benefits will be available, under the provisions of the Uniform Relocation Act and MN Stat. 117, for displaced businesses and non-profit organizations including moving costs, tangible personal property loss as a result of relocation or discontinuance of operations, reestablishment expenses, and costs incurred in finding a replacement site.

3.5 Cultural Resources

This section describes long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on cultural resources. The National Environmental Policy Act of 1969 (NEPA) requires federal agencies to consider the impacts of their actions on cultural resources, and Section 306108 (hereinafter referred to as Section 106) of the National Historic Preservation Act of 1966 (NHPA) requires agencies to consider the effects of their undertakings on historic properties.

For the purposes of this section, "cultural resource" means the same as "historic property." Historic properties are buildings, structures, districts, objects, and sites that are listed in or eligible for listing in the National Register of Historic Places (NRHP). The Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR Parts 1500-1508) encourage integration of the NEPA process with other planning and environmental reviews, such as Section 106. CEQ regulations also clarify that under NEPA, "impact" is synonymous with "effect" under Section 106 (40 CFR 1508.8); therefore, "effect" is used throughout this section, consistent with Section 106 regulations. The regulations implementing Section 106, *Protection of Historic Properties* (36 CFR Part 800), encourage agencies coordinate Section 106 consultations with the requirements of other statutes, as applicable, such as NEPA. As such, this section of the Final EIS includes identification of commitments and mitigation measures included within the Project's Section 106 Memorandum of Agreement (MOA) (see Section 3.5.5 and Appendix H).

This section includes an overview of the regulatory context and methodology used for the analysis; a summary of the Project's Section 106 consultation process; an evaluation of existing historic properties; an assessment of the anticipated effects related to historic properties; and a description of avoidance, minimization, and mitigation measures to implement with the Project (see Section 3.17 for cumulative impacts).

Appendix H includes documentation of the Section 106 consultation process, including copies of the Project's consultation materials (see also Section 3.5.2). A list of reports and studies on historic properties can be found in the *Cultural Resources Evaluation Supporting Documentation Technical Memorandum* (see Appendix C for instructions on how to access the technical memorandum). The reports summarized in this memorandum, combined with the correspondence with the Minnesota Historic Preservation Office (MnHPO) in Appendix N, provide documentation of the FTA's efforts to identify historic properties and the MnHPO's concurrence (see also Section 3.5.3). Appendix H contains the *Section 106 Assessment of Effects for Historic Properties* (Assessment of Effects report), which documents FTA's findings of effect for all identified historic properties and overall determination of effect for the project. Documentation of MnHPO's concurrence with those findings is provided in Appendix N. Appendix H also includes a copy of the Project's Section 106 MOA (see also Section 3.5.4).

3.5.1 Regulatory Context and Methodology

This section describes the regulatory context and methodology for the historic properties assessment under Section 106. After an introduction summarizing the Section 106 process, this section describes the methodologies used to determine the architecture/history and archaeological Areas of Potential Effect (APEs), the methods used to identify historic properties and evaluate them for the NRHP, how effects on historic properties are assessed, and how adverse effects are resolved under Section 106.

The Council will apply for FTA funding for the Project and will seek permits for construction from the United States Army Corps of Engineers (USACE); therefore, this project is a federal undertaking and must comply with Section 106 and with other applicable federal mandates. Section 106 requires federal agencies to consider the effects of their actions on historic properties before undertaking a project. The regulations implementing Section 106 are codified in 36 CFR Part 800. The FTA is the Lead Federal Agency for the Project. The Council is the Project's local lead agency and project sponsor. The USACE is a Federal Cooperating Agency for the Project, responsible for implementing NEPA and related laws and Section 404 of the Clean Water Act. Pursuant to 36 CFR Part 800.2(a)(2), the USACE has also recognized FTA as the Lead Federal Agency for the Section 106 process for the Project.²⁶

FTA's Section 106 compliance was achieved through consultation with the MnHPO, Indian tribes, local governments, and other interested parties. Section 106 directs that the responsible Federal agency shall:

- Initiate the Section 106 process by determining the undertaking, notifying the MnHPO and Indian tribes, and developing a plan to involve the public (36 CFR Part 800.3);
- Identify historic properties that are listed, or eligible for listing, in the NRHP by determining an APE, conducting a survey to identify historic properties, and evaluating historic properties under NRHP criteria (36 CFR Part 800.4);
- Assess the effects of the undertaking on historic properties by applying the criteria of adverse effect, and consulting with the MnHPO, Indian tribes, and the public (36 CFR Parts 800.5 and 800.11(e)); and
- Resolve any adverse effect(s) by continuing consultation with Section 106 consulting parties to explore measures that avoid, minimize, or mitigate the adverse effect(s), and develop a Section 106 Agreement to document agreed upon measures (36 CFR Part 800.6).

The FTA has designated the Minnesota Department of Transportation (MnDOT) Cultural Resources Unit (CRU) to carry out many aspects of the Section 106 review for this project. FTA detailed these responsibilities in a letter to MnDOT, included in Appendix N. FTA and MnDOT CRU, in consultation with the MnHPO, defined the Project's architecture/history and archaeological APEs, identified and evaluated historic properties, assessed effects of the Project on historic properties listed in or eligible for inclusion in the NRHP, and resolved adverse effects.

The Project will also use funding from the State of Minnesota and political subdivisions of the State and is seeking permits for construction from several state agencies, including MnDOT, Minnesota Department of Natural Resources, Minnesota Pollution Control Agency, and Minnesota Department of Health. It must also, therefore, comply with Minnesota laws, including the Minnesota Field Archaeology Act (MS 138.31-138.42), the Minnesota Historic Sites Act (MS 138.661-138.669), and the Minnesota Private Cemeteries Act (MS 307.08), as applicable.

3.5.1.1 Area of Potential Effect

This Project has two APEs, one for architecture/history properties (Exhibits 3.5-1 through 3.5-3) and one for archaeological properties (Exhibits 3.5-4 and 3.5-5), which are the geographic areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The rationale for the architecture/history and archaeological APEs can be found in *Southwest Transitway: A Research Design for Cultural Resources* (Hess, Roise and Company, et al., 2010) and *Southwest Light Rail Transit Project Research Design for Cultural Resources: Supplement Number 1* (MnDOT CRU, 2014), which are included in the *Cultural Resources Evaluation Supporting Documentation Technical Memorandum*. Appendix C contains instructions on how to access the technical memorandum.

²⁶ In a letter dated January 15, 2015, the USACE recognized FTA as the Lead Federal Agency pursuant to 36 CFR 800.2(a)(2), to act on its behalf for meeting the requirements of Section 106. See Appendix N for a copy of USACE's letter.

EXHIBIT 3.5-1

Architecture/History Area of Potential Effect, Properties, and Hopkins Downtown Commercial Historic District: Eden Prairie, Minnetonka, and Hopkins

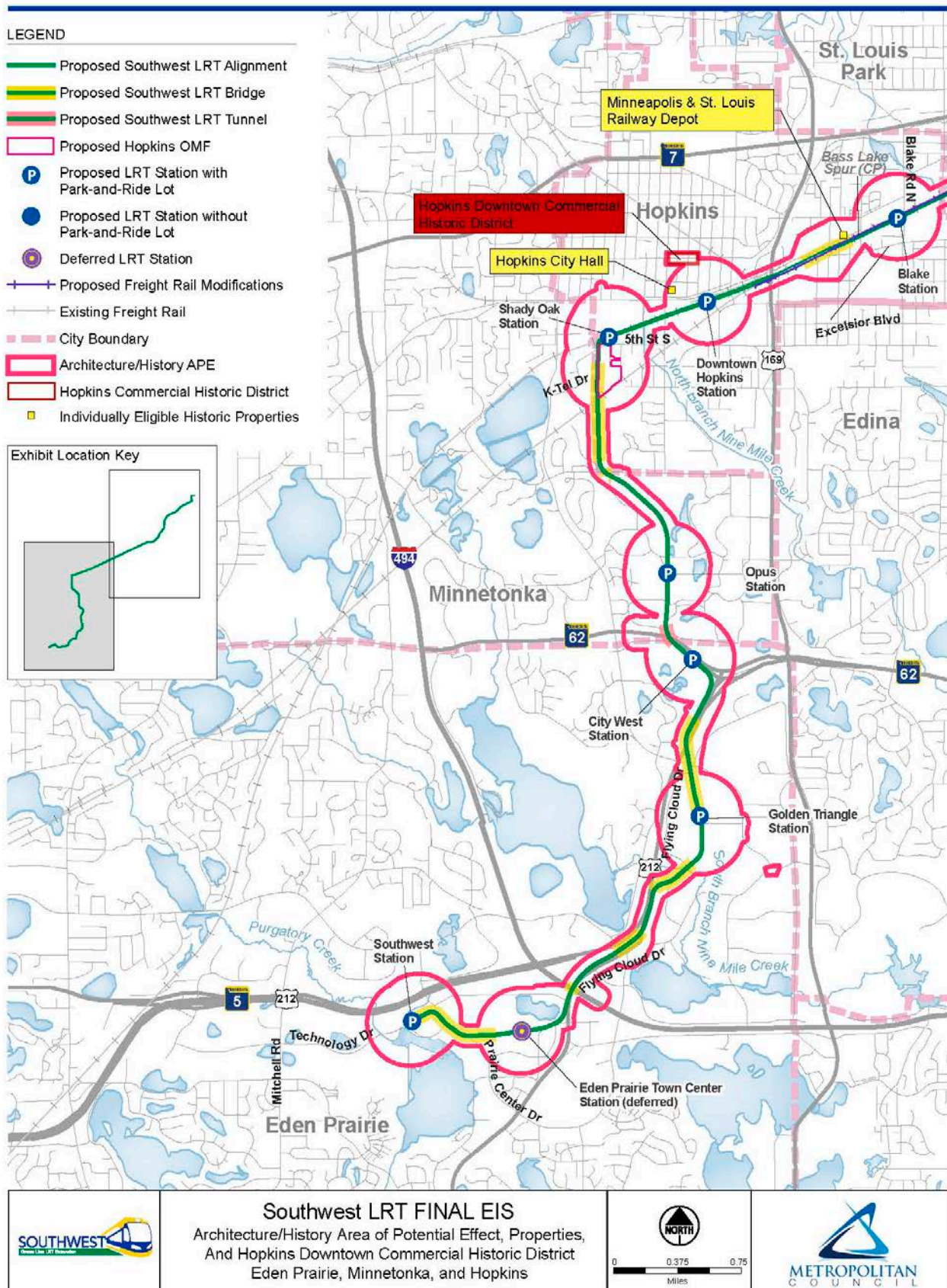


EXHIBIT 3.5-2

Architecture/History Area of Potential Effect and Properties: St. Louis Park and Minneapolis

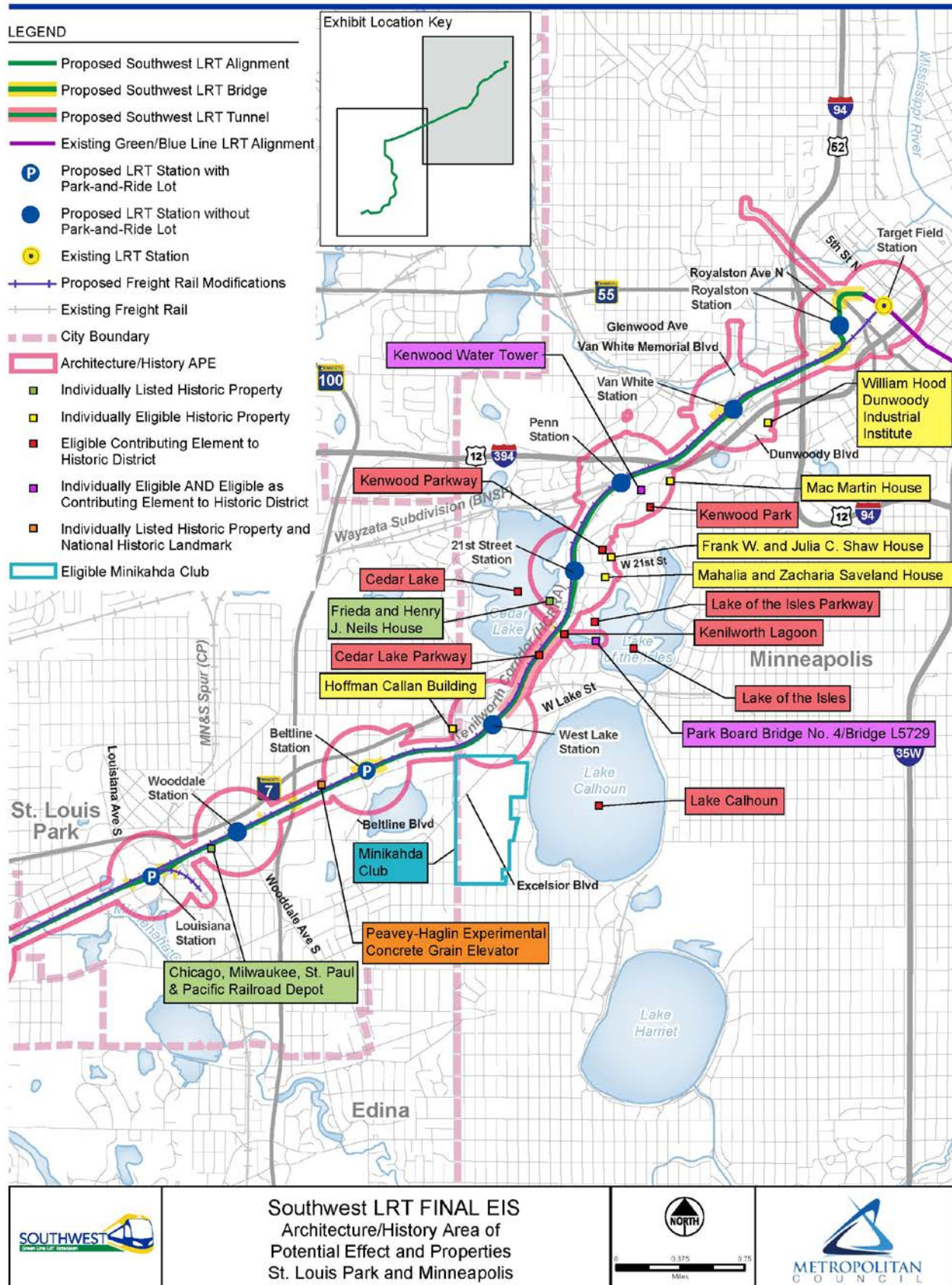


EXHIBIT 3.5-3

Architecture/History Area of Potential Effect and Historic Districts: St. Louis Park and Minneapolis

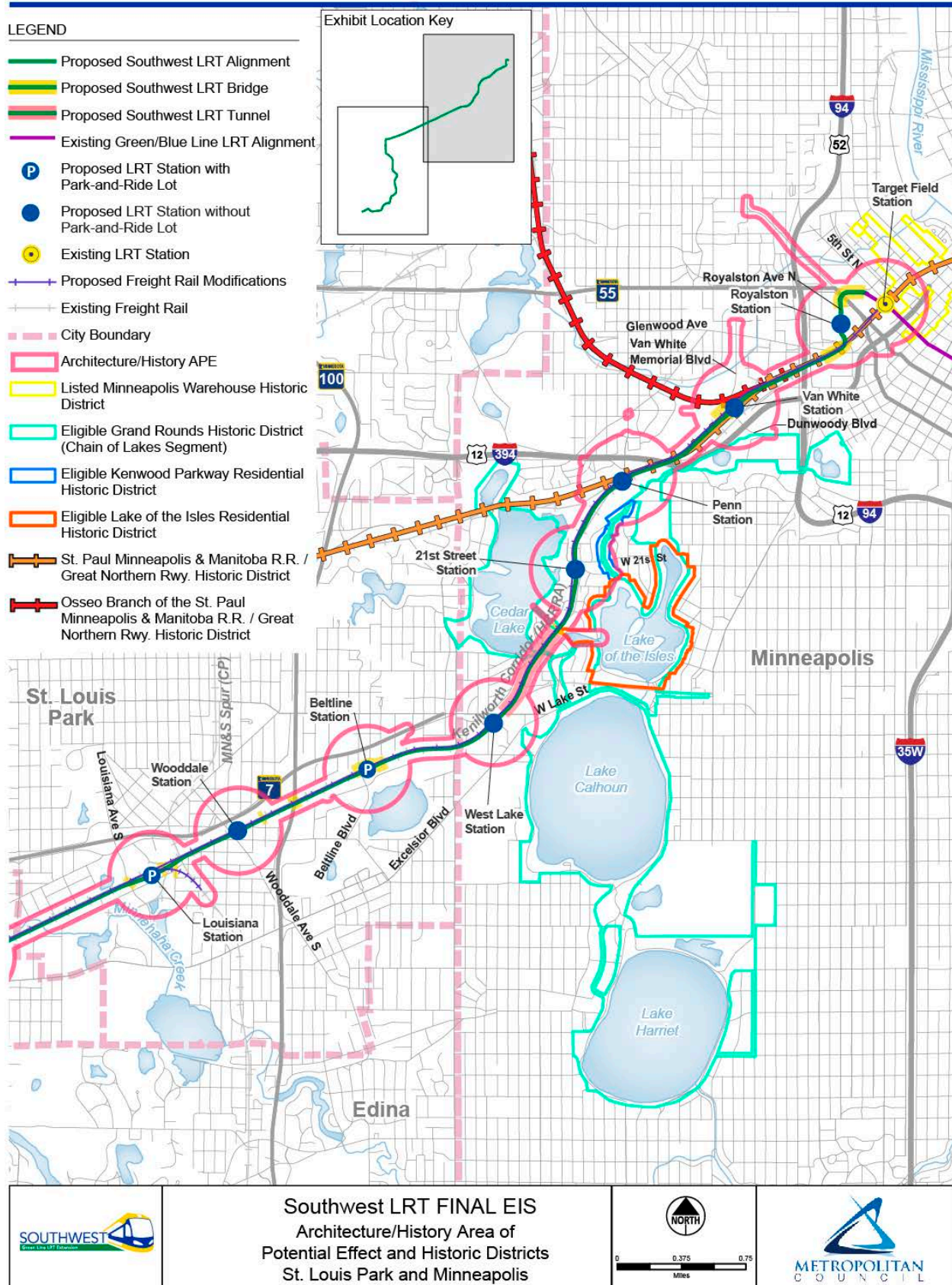


EXHIBIT 3.5-4

Archaeological Area of Potential Effect: Eden Prairie, Minnetonka, and Hopkins

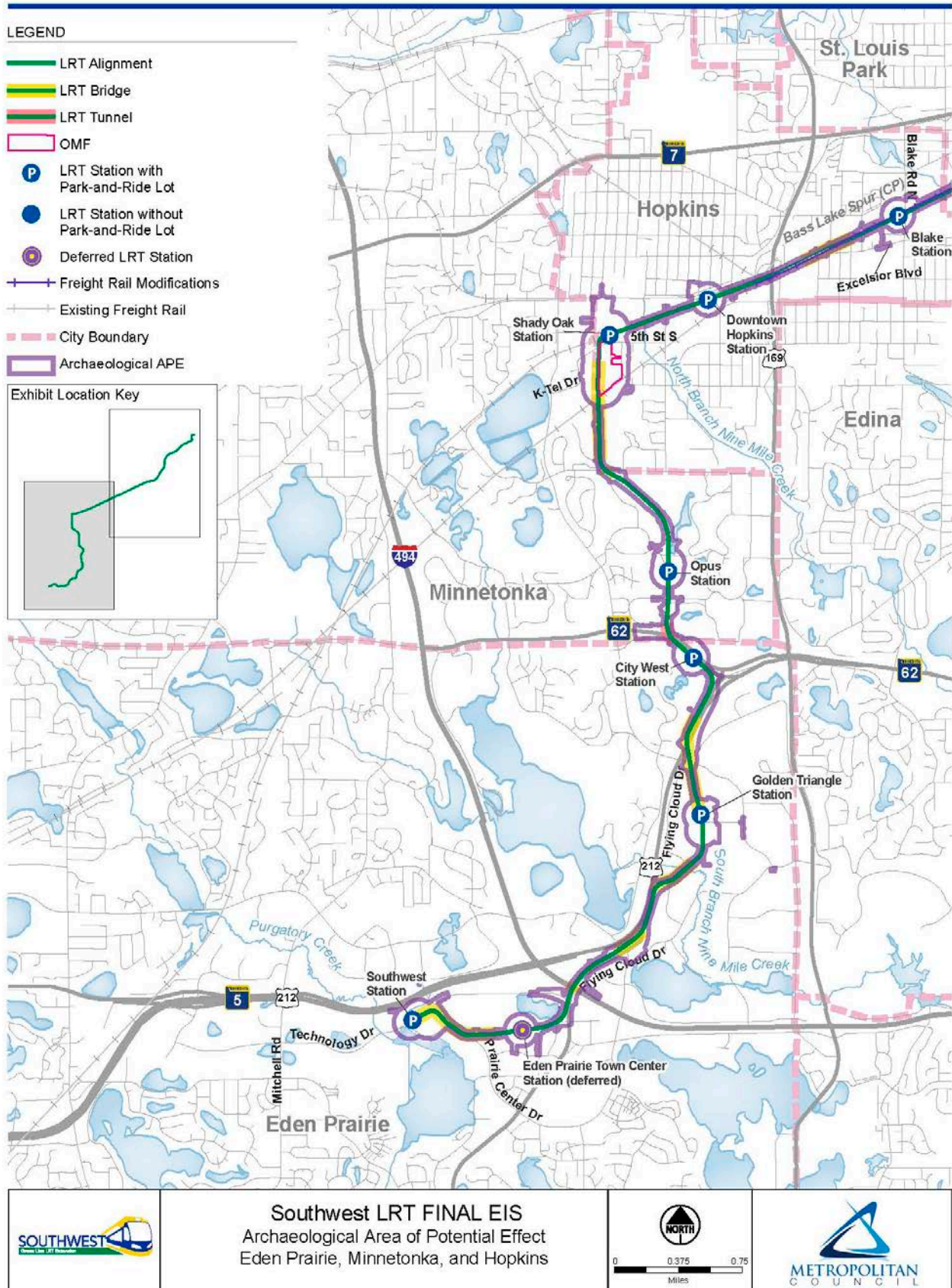
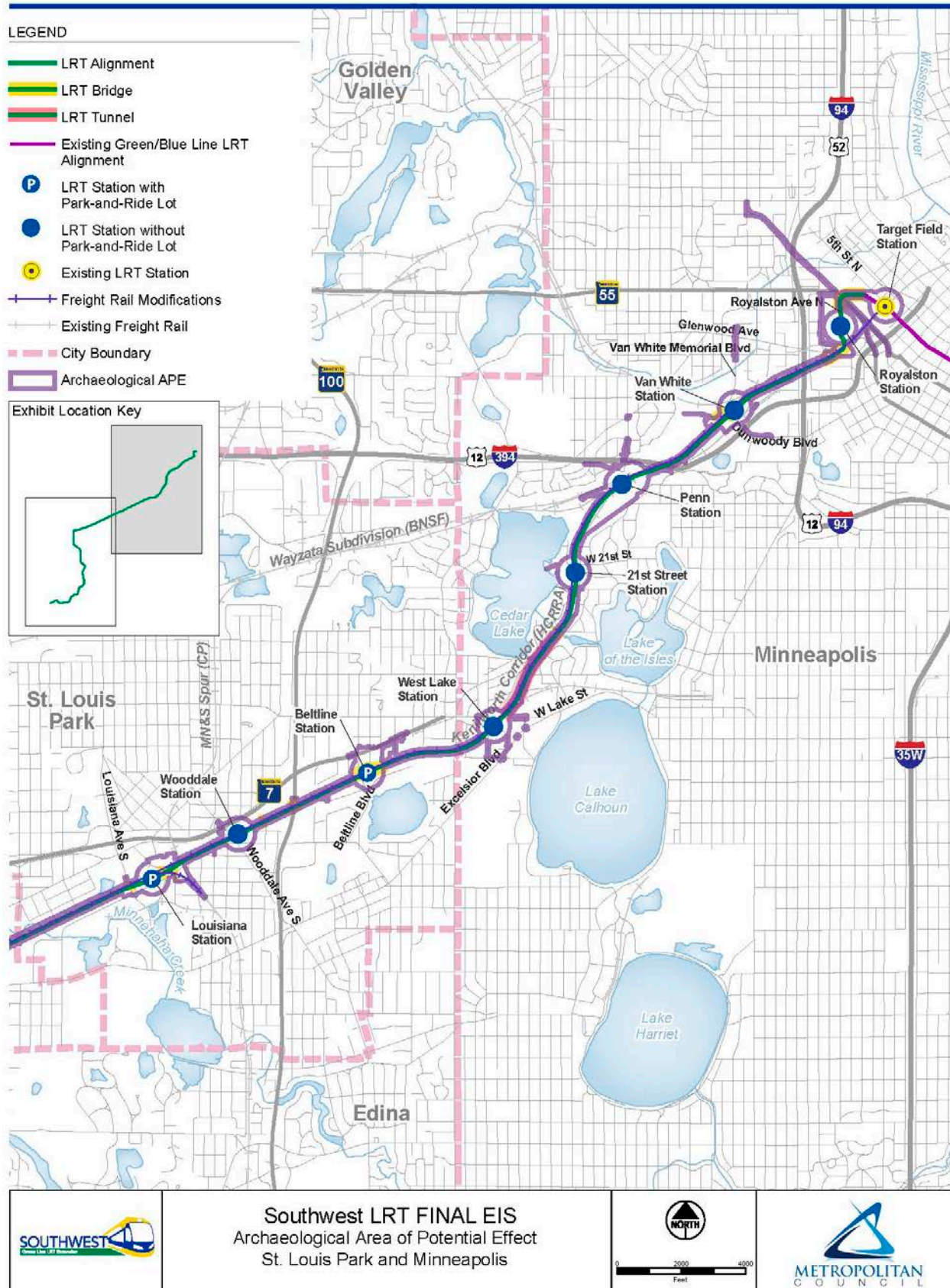


EXHIBIT 3.5-5

Archaeological Area of Potential Effect: St. Louis Park and Minneapolis



3.5.1.2 Identification and Evaluation of Historic Properties

Section 106 gives equal consideration to historic properties listed in or determined eligible for listing in the NRHP. The NRHP Criteria for Evaluation (36 CFR Part 63) are used to evaluate a historic property to determine whether it possesses historic significance, is of sufficient age, and retains sufficient integrity to convey any potential significance. A historic property can be eligible for the NRHP either individually, as part of a historic district, or both.

The significance of each historic property was evaluated in relation to the following NRHP eligibility criteria:

- Criterion A—association with events that have made a significant contribution to broad patterns of history
- Criterion B—association with the life of a historically significant person
- Criterion C—embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction
- Criterion D—has yielded, or is likely to yield, information important in history or prehistory (this generally is understood to refer to archeological significance)

To be eligible for listing in the NRHP, a property must be 50 years old, or, if it is less than 50 years old, possess exceptional significance. A property must also retain sufficient integrity to convey its significance.

To identify historic properties within the Project's architecture/history and archaeological APEs, nine architecture/history and nine archaeological investigations were completed. These investigations identified historic properties (i.e., buildings, objects, structures, districts, or sites previously listed in or eligible for listing in the NRHP) within the Southwest LRT Project's archaeological and architecture/history APEs. Appendix C contains instructions on how to access the *Cultural Resources Evaluation Supporting Documentation Technical Memorandum*, which lists and contains copies of all reports associated with the historic properties studies.

3.5.1.3 Standards Used to Assess and Resolve Adverse Effects

FTA and MnDOT CRU used the criteria of adverse effect described in 36 CFR Part 800.5(a)(1) to assess Project effects on historic properties. Per 36 CFR Part 800.5(a)(1), "an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." A full discussion of the Project's effects on each historic property can be found in Appendix H.

3.5.2 Section 106 Coordination

3.5.2.1 Agency Coordination and Public Involvement

Section 106 consultation continued with MnHPO and other Section 106 consulting parties since publication of the Notice of Intent for the Draft EIS and through development of the Section 106 MOA. The Section 106 process tasks conducted to date include identifying the architecture/history and archaeological APEs, identifying historic properties and determining their eligibility for the NRHP, assessing Project effects on historic properties and making findings of effects, including a final determination of effect, and developing a Section 106 MOA that outlines measures to avoid, minimize, and mitigate adverse effects to historic properties. Stipulations in the Section 106 MOA will guide the Project's implementation.

To comply with Section 106 requirements, MnDOT CRU submitted the architecture/history and archaeological APEs, the results of the surveys/investigations completed for the Project, including NRHP eligibility determinations, and preliminary determinations of effect to the MnHPO for concurrence, and to other Section 106 consulting parties for their review and comment. The FTA submitted its final findings of effects of the Project on historic properties and the final determination of effect of the Project on historic properties as a whole to the MnHPO for concurrence, and to other Section 106 consulting parties for their review and comment. MnHPO concurred with the Project's APEs, NRHP eligibility determinations, and final

determination of effect on historic properties (Appendix H). Letters from the MnHPO can be found in Appendix N. Additional consultation with Section 106 consulting parties occurred throughout the Section 106 process. Documentation of these consultation efforts can also be found in Appendix H. The Advisory Council on Historic Preservation (ACHP) was notified of the Section 106 process for this Project at the initiation of the process and chose not to participate in the consultation. Pursuant to the Section 106 regulations (36 CFR Part 800.6(a)(1)), the ACHP was subsequently notified of the final determination of an adverse effect and was provided another opportunity to enter into the consultation process but chose not to participate in the consultation (see Appendix N).

Section 106 consulting parties include the MnHPO; USACE; Hennepin County; the Cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis; the Minneapolis Park and Recreation Board; the Eden Prairie and Minneapolis Heritage Preservation Commissions; St. Louis Park Historical Society; Three Rivers Park District; Cedar-Isles-Dean Neighborhood Association; and Kenwood Isles Area Association. Signatories and invited signatories to the Section 106 MOA include the FTA, MnHPO, MnDOT and the Council.

In accordance with 36 CFR Part 800.8, Section 106 consultation efforts were coordinated with the NEPA process and related outreach activities and events. In particular, opportunities for the public to review information pertaining to and provide comments related to steps in the Section 106 process were incorporated, as appropriate, into public meetings related to the NEPA and design and engineering processes, such as open houses held on station design options near historic properties. At these meetings, information was shared summarizing the steps in the Section 106 process, historic properties identified, and effects to historic properties. A list of meetings related to agency coordination and public involvement efforts is included in Table 3.5-1.

TABLE 3.5-1
Meetings Related to Section 106

Date	Meeting Type	Purpose
October 7, 2008	Public Scoping Meeting/Scoping Hearing	Draft EIS Scoping: Alternatives development and issues to be studied, including cultural resources
October 14, 2008	Public Scoping Meeting/Scoping Hearing	Draft EIS Scoping: Alternatives development and issues to be studied, including cultural resources
October 23, 2008	Public Scoping Meeting/Scoping Hearing	Draft EIS Scoping: Alternatives development and issues to be studied, including cultural resources
May 18, 2010	Public Open House	General project meeting, update on environmental review, including cultural resources
May 19, 2010	Public Open House	General project meeting, update on environmental review, including cultural resources
May 20, 2010	Public Open House	General project meeting, update on environmental review, including cultural resources
April 12, 2012	Section 106 Consulting Parties Meeting	APE development and property identification
April 30, 2014	Section 106 Consulting Parties Meeting	Corridor-wide discussion on effects to historic properties, Kenilworth Lagoon Crossing
November 24, 2014	Section 106 Consulting Parties Meeting	Design and APE adjustments, historic properties update, preliminary effects determinations
February 6, 2015	Section 106 Consulting Parties Meeting	Kenilworth Lagoon Crossing design options and concepts, measures to minimize/mitigate adverse effects
February 24, 2015	Section 106 Consulting Parties Meeting	Corridor-wide discussion on effects to historic properties
April 2, 2015	Station Design Open House: Minneapolis Stations	Review of station design concepts, including overview of historic properties identified
April 8, 2015	Station Design Open House: Minneapolis Stations	Review of station design concepts, including overview of historic properties identified
April 8, 2015	Station Design Open House: St. Louis Park Stations	Review of station design concepts, including overview of historic properties identified

Date	Meeting Type	Purpose
April 9, 2015	Station Design Open House: Eden Prairie Stations	Review of station design concepts, including overview of historic properties identified
April 14, 2015	Station Design Open House: Hopkins Stations	Review of station design concepts, including overview of historic properties identified
April 22, 2015	Section 106 Consulting Parties Meeting	Archaeological sites, Kenilworth Lagoon Crossing, station design open house recap
June 13, 2015	Kenilworth Landscape Design Community Workshop #1	Present information about the Kenilworth corridor landscape design project and process, including Section 106 and Lagoon as a historic property; overview of Kenilworth Lagoon Crossing bridge design concepts
June 16, 2015	Supplemental Draft EIS Public Open House and Hearing	Project overview and public review of materials, opportunity for public comment on Supplemental Draft EIS
June 17, 2015	Section 106 Consulting Parties Meeting	Historic properties and transit noise and vibration effects overview, Kenilworth Lagoon Crossing bridge design
June 17, 2015	Supplemental Draft EIS Public Open House and Hearing	Project overview and public review of materials, opportunity for public comment on Supplemental Draft EIS
June 18, 2015	Supplemental Draft EIS Public Open House and Hearing	Project overview and public review of materials, opportunity for public comment on Supplemental Draft EIS
July 29, 2015	Section 106 Consulting Parties Meeting	Kenilworth Lagoon Crossing bridge and landscape design
September 23, 2015	Section 106 Consulting Parties Meeting	Consultation process update, historic properties and traffic and parking effects, Kenilworth Lagoon Crossing design update
December 3, 2015	Section 106 Consulting Parties Meeting	Review final findings and final determination of effect, and consult to resolve adverse effects
February 25, 2016	Section 106 Consulting Parties Meeting	Consult to complete resolution of adverse effects and review draft MOA

3.5.2.2 Tribal Coordination

In September and November 2009 and February 2010, the FTA sent letters to potentially affected Indian tribes, requesting that they identify any concerns about potential Project effects and inviting them to participate in public scoping meetings and/or schedule a separate meeting to discuss any specific tribal issues and concerns. Letters were sent to the Prairie Island Indian Community, Lower Sioux Indian Community Council, Shakopee Mdewakanton Sioux Community, Fort Peck Tribes, Santee Sioux Nation, Sisseton-Wahpeton Oyate (Tribal Historic Preservation Office), and the Upper Sioux Indian Community. Copies of the letters can be found in Appendix N. Additionally, a meeting opportunity was offered to tribal representatives in 2010; none of these tribes expressed an interest in meeting at that time. The tribes also received copies of the Draft EIS and Supplemental Draft EIS, and were invited to comment on the documents; no comments were received. The Project will have no adverse effects to historic properties that appear to be culturally significant to Indian tribes.

3.5.3 Affected Environment

A total of thirty-one historic properties located within the Southwest LRT Project's architecture/history and archaeological APEs were determined to be eligible for or listed in the NRHP, including one that is a National Historic Landmark (NHL). Tables 3.5-2 and 3.5-3 list these historic properties.

TABLE 3.5-2

Historic Properties Adversely Affected by the Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Adverse Effect Finding and avoidance/minimization/mitigation measures
Historic Districts					
XX-PRK-001	Grand Rounds Historic District (GRHD) ^d	Minneapolis	Eligible as a historic district	Criteria: A & C ^a Areas of Significance: <ul style="list-style-type: none"> • Community Planning & Development • Entertainment/Recreation • Landscape Architecture 	<ul style="list-style-type: none"> • Effects Considered <ul style="list-style-type: none"> - Direct physical effects, including: <ul style="list-style-type: none"> o Destruction and alteration of Kenilworth Lagoon features and construction of new crossing over the lagoon o Reconstruction of Cedar Lake Parkway - Changes to setting through introduction of LRT into and adjacent to the district^b - Noise effects from LRT operations^c - Station access - Changes to traffic in the district • Adverse Effect Finding: <ul style="list-style-type: none"> - Within the GRHD there are 10 discrete contributing elements and three non-contributing elements that will be affected by the Project. Discussions of effects to individual contributing elements to the district are presented in the Individual Properties section of this table and Table 3.5-3 - The construction and operation of the Project will result in direct physical and indirect effects to the Kenilworth Lagoon that will alter characteristics of this contributing element of the GRHD that qualify it for the NRHP in a way that will diminish the district's historic integrity of design, materials, workmanship, feeling, and association - Partial destruction of, and alteration to, a portion of the Kenilworth Lagoon - Introduction of visual elements that will alter the visual and aesthetic character of the Kenilworth Lagoon and its setting - Introduction of noise effects that will alter the feeling of the Kenilworth Lagoon • Avoidance/minimization/mitigation measures: <ul style="list-style-type: none"> - Implement Section 106 MOA^e measures
Individual Properties					
HE-SLC-008	Chicago, Milwaukee, St. Paul & Pacific Railroad Depot	6210 W 37th St., St. Louis Park	Listed as an individual property	Criterion: A ^a Area of Significance Transportation	<ul style="list-style-type: none"> • Effects Considered: <ul style="list-style-type: none"> - Possible development/redevelopment around the depot catalyzed by the Project around the Wooddale Station - Change to the property's setting,^b including: <ul style="list-style-type: none"> o Introduction of LRT tracks and catenary to nearby railroad corridor o Placement of a signal bungalow near the depot

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Adverse Effect Finding and avoidance/minimization/mitigation measures
					<ul style="list-style-type: none"> ○ Construction of noise walls along on the alignment between the depot and railroad corridor with which it is associated • Adverse Effect Finding <ul style="list-style-type: none"> – The construction of Project infrastructure, specifically the introduction of a solid, approximately eight to 11 foot tall noise wall between the depot and the railroad corridor with which it is associated will sever the direct visual connection and relationship between the depot and the railroad, thereby altering an important characteristic that qualifies the depot for the NRHP in a way that diminishes its integrity of setting, feeling, and association • Avoidance/minimization measures: <ul style="list-style-type: none"> – Implement Section 106 MOA^e measures^f
HE-MPC-1822	Kenilworth Lagoon ^d	Minneapolis	Eligible as a contributing element to the GRHD and the LIRHD	Criteria: A & C ^a Areas of Significance <ul style="list-style-type: none"> • Community Planning & Development • Entertainment/ Recreation • Landscape Architecture 	<ul style="list-style-type: none"> • Effects Considered <ul style="list-style-type: none"> – Direct physical effects including: <ul style="list-style-type: none"> ○ Removal and replacement of two existing former Minneapolis & St. Louis Railway (M&StL) wood trestles (non-contributing elements to the GRHD) over the lagoon with new freight rail, LRT, and trail bridges over the lagoon ○ Destruction and/or alteration of portions of the lagoon topography, landscape, vegetation and WPA retaining walls – Change to setting including:^b <ul style="list-style-type: none"> ○ New bridge crossing introducing visual, atmospheric, or audible elements that alter the character and feeling of the Lagoon • Adverse Effect Finding: Based on changes to the property and its setting, including: <ul style="list-style-type: none"> – Removal of the existing non-contributing railroad and trail bridges (HE-MPC-1850 and HE-MPC-1851 [non-contributing based on association, not age, design or integrity]) across the lagoon^g – Replacement of the existing railroad and trail bridges with new light rail, freight rail, and trail bridges over the lagoon <ul style="list-style-type: none"> ○ Design and visibility of the new bridge structure across the lagoon ○ Effect of the wider width of the new crossing on the character and feeling of the middle section of the Kenilworth Lagoon and on the experience of using the waterway when passing under the new structure – Partial destruction and/or alterations of contributing WPA retaining walls

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Adverse Effect Finding and avoidance/minimization/mitigation measures
					<ul style="list-style-type: none"> - Destruction and/or replacement of portions of the landscape, including topography and some existing vegetation - Moderate noise impact • Avoidance/minimization/mitigation measures: <ul style="list-style-type: none"> - Implement Section 106 MOA^a measures
21HE0436 ^a	— ^h	Minneapolis	Eligible	Criterion: D ⁱ	<ul style="list-style-type: none"> • Effects considered <ul style="list-style-type: none"> - Direct physical effects from construction of the Project • Adverse Effect Finding: <ul style="list-style-type: none"> - This archaeological site will be destroyed^j for the construction of the Project - Alternative locations for Project elements were explored during Project Development in consultation with the City of Minneapolis and MnHPO, and found not to be feasible due to existing built urban environment, limited right-of-way, engineering constraints that would affect the operational efficiencies of LRT service, and increased project costs. • Avoidance/minimization/mitigation measures: <ul style="list-style-type: none"> - Implement Section 106 MOA^a measures
21HE0437 ^a	— ^h	Minneapolis	Eligible	Criterion: D ⁱ	<ul style="list-style-type: none"> • Effects considered <ul style="list-style-type: none"> - Direct physical effects from construction of the Project • Adverse Effect Finding: <ul style="list-style-type: none"> - This archaeological site will be destroyed^j for the construction of the Project - Alternative locations for Project elements were explored during Project Development in consultation with the City of Minneapolis and MnHPO, and found not to be feasible due to existing built urban environment, limited right-of-way, engineering constraints that would affect the operational efficiencies of LRT service, and increased project costs. • Avoidance/minimization/mitigation measures: <ul style="list-style-type: none"> - Implement Section 106 MOA^a measures

^a Minnesota Historic Preservation Office.

^b Assessing visual effects under NEPA and potential visual effects to inform a determination of effect under Section 106 are two separate processes that may have similar or different conclusions. The results of an evaluation of effects to visual quality and aesthetics per NEPA can be found in Section 3.7.

^c Under FTA guidance, historic properties are designated as noise- or vibration-sensitive depending on the land use of the property, not their designation as historic. Properties of national significance with considerable outdoor use required for site interpretation would be in Category 1. Historic properties that are currently used as residences would be in Category 2. Historic buildings with indoor use of an interpretive nature involving meditation and study would be in Category 3, including museums, significant birthplaces, and buildings in which significant historical events occurred. Most downtown areas have buildings which are historically significant because they represent a particular architectural style or are prime examples of the work of a historically significant designer. If the buildings or structures are used for commercial or industrial purposes and are located in busy commercial areas, they are not considered noise or vibration sensitive and the noise and vibration effect criteria do not apply. Similarly, historic transportation structures, such as terminals and railroad depots, are not considered noise- or vibration-sensitive land uses. See Appendix K of this Final EIS for additional information.

^d Section 6.7.2.15 contains the Section 4(f) evaluation of the Kenilworth Lagoon/GRHD, based on the Section 106 finding of effect for those historic properties and including the Section 4(f) determination that there is no prudent and feasible alternative to the Project and that the Project would result in the Least Overall Harm to Section 4(f)-protected

properties. Chapter 6 provides additional background on the Section 4(f) regulations, process, documentation, and terminology. As the Section 4(f) Official with Jurisdiction, the MnHPO was consulted through the Section 4(f) process for the Section 4(f) use of the Kenilworth Lagoon/GRHD and on other affected historic properties.

^e A Section 106 MOA is a legally binding document that commits FTA and the Council to implement measures to avoid, minimize and/or mitigate adverse effects on historic properties. For information on avoidance/minimization/mitigations measures specific to a property or district, please see the Section 106 MOA in Appendix H.

^f Through consultation with Section 106 consulting parties completed as part of the Section 106 process to resolve the adverse effect to the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot, an alternative was identified that avoids the adverse effect to the depot under Section 106. The identified measures for avoiding the adverse effect were incorporated into the Project's design and Section 106 MOA. See Appendix H for the Section 106 MOA.

^g Two existing wood pile bridges (HE-MPC-1850 and HE-MPC-1851) spanning the Kenilworth Lagoon within the Kenilworth Corridor, and the Burnham Road Bridge (HE-MPC-1832), a two-lane automobile bridge with a steel beam span, were all evaluated for NRHP eligibility as a Section 106 historic property. The three bridges were found to be non-contributing elements of the Grand Rounds Historic District and were found to not be eligible for listing on the NRHP as individual properties.

^h This property is considered a sensitive historic resource under Section 304 of the NHPA, as amended. In accordance with Section 304, information on this sensitive historic property may cause a significant invasion of privacy and/or put the property at risk to harm and is not included in this document. Names, locations, and areas of significance of archaeological sites are not disclosed to help preserve these sensitive properties.

ⁱ 10,000 Lakes, 2014.

^j The term "destroyed" is a term used in applying 36 CFR Part 800.5 and the Secretary of the Interior's (SOI's) Standards for the Treatment of Historic Properties (Standards) (36 CFR Part 68).

Source: MnDOT CRU, 2015.

TABLE 3.5-3

Historic Properties Not Adversely Affected by the Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
Historic Districts					
HE-HOC-027	Hopkins Downtown Commercial Historic District	Mainstreet, 8th Ave. to 11th Ave., Hopkins	Eligible as a historic district	Criterion: A ^a Areas of Significance: • Commerce	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment adjacent to and within the historic district catalyzed by the Project around the Hopkins Station No Adverse Effect Finding: <ul style="list-style-type: none"> No work proposed in immediate vicinity of the historic district As stipulated in the MOA, a NRHP nomination will be prepared for the district, which will make financial incentive available to some property owners to encourage rehabilitation rather than replacement of properties in the district in order to avoid potential future adverse effects due to potential development pressure catalyzed by the Project around the Hopkins Station Avoidance/minimization measures: <ul style="list-style-type: none"> Implement Section 106 MOA^b measures
HE-MPC-9860	Lake of the Isles Residential Historic District (LOIRHD)	Vicinity of E/W Lake of the Isles Parkway, Minneapolis	Eligible as a historic district	Criterion: A ^c Areas of Significance: • Architecture • Community Planning & Development • Landscape Architecture	<ul style="list-style-type: none"> Effects considered: <ul style="list-style-type: none"> Changes to the historic district's visual character and setting due to the design and visibility of the new bridge structures across the Kenilworth Lagoon, which is partially located in the district^d Changes to traffic and access in the district Noise effects from LRT operations^e No Adverse Effect Finding:

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
					<ul style="list-style-type: none"> – Potential adverse effect of setting change due to new Kenilworth Lagoon Crossing structures avoided by designing the new crossing in accordance with the <i>SOI's Standards</i> and design review by MnHPO as stipulated in the MOA – No moderate or severe noise impacts identified for this property, per FTA criteria – • Avoidance/minimization measures: <ul style="list-style-type: none"> – Implement Section 106 MOA^b measures
HE-MPC-18059	Kenwood Parkway Residential Historic District (KPRHD)	1805-2216 Kenwood Pkwy. Minneapolis	Eligible as a historic district	Criterion: A ^c Area of Significance: <ul style="list-style-type: none"> • Community Planning & Development 	<ul style="list-style-type: none"> • Effects Considered: <ul style="list-style-type: none"> – Changes to traffic and access in the district – Possible development/redevelopment adjacent to and within the historic district catalyzed by the Project around the 21st Street and Penn stations – Noise effects from LRT operations^e – Construction vibration • No Adverse Effect Finding: <ul style="list-style-type: none"> – Adverse effects avoided with use of construction monitoring – No substantial changes in traffic and access – No moderate or severe noise impacts or vibration impacts identified for this property, per FTA criteria
HE-RRD-002 (district), HE-MPC-16389 (portion of district in Minneapolis) ^g	Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/ Great Northern Railway Historic District	Minneapolis	Eligible as a historic district	Criterion: A ^h Area of Significance: <ul style="list-style-type: none"> • Transportation 	<ul style="list-style-type: none"> • Effects Considered: <ul style="list-style-type: none"> – Possible development/redevelopment catalyzed by the Project around the Van White Station – Introduction of LRT infrastructure to the corridor • No Adverse Effect Finding: <ul style="list-style-type: none"> – The continuity of the linear resource will be maintained within the historic corridor – LRT infrastructure is generally compatible with the character of the historic district, but to minimize potential visual effects, Project infrastructure within the adjacent St. Paul, Minneapolis & Manitoba Railroad/ Great Northern Railway Historic District will be designed in accordance with the <i>SOI's Standards</i> and undergo design review by MnHPO as stipulated in the MOA
HE-MPC-16387 (portion of district in Minneapolis)	St. Paul, Minneapolis & Manitoba Railroad/ Great Northern Railway Historic District	Minneapolis	Eligible as a historic district	Criterion: A ⁱ Area of Significance: <ul style="list-style-type: none"> • Transportation 	<ul style="list-style-type: none"> • Effects Considered: <ul style="list-style-type: none"> – Alignment shift – Introduction of LRT infrastructure to corridor – Property acquisition • No Adverse Effect Finding:

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
					<ul style="list-style-type: none"> Freight rail (BNSF) operations will continue In one section of the line, from approximately I-94 to approximately Royalston Avenue (total length of 2,543 feet), the tracks will be shifted from 0 to 11 feet northward, but the continuity of the linear resource will be maintained within the historic corridor. LRT infrastructure is generally compatible with the character of the historic district, but to minimize potential adverse effects, Project infrastructure within the district will be designed in accordance with the <i>SOI's Standards</i> and undergo design review by MnHPO as stipulated in the MOA Avoidance/minimization measures: <ul style="list-style-type: none"> Implement Section 106 MOA^b measures
HE-MPC-0441	Minneapolis Warehouse Historic District	Vicinity of 1st Ave N, N 1st St, 10th Ave N, and N 6th St, Minneapolis	Listed as a historic district	Criteria: A & C ^c Areas of Significance: <ul style="list-style-type: none"> Commerce Architecture 	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment adjacent to and within the historic district catalyzed by the Project around the Target Field (Interchange) Station No Adverse Effect Finding: <ul style="list-style-type: none"> Potential effects were addressed as part of the Section 106 review for the Target Field Stationⁱ
Individual Properties^j					
HE-HOC-026	Hopkins City Hall	1010 1st St S, Hopkins	Eligible as an individual property	Criterion: A ^a Area of Significance: <ul style="list-style-type: none"> Community Planning & Development 	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment in the vicinity of the City Hall catalyzed by the Project around the Hopkins Station No Adverse Effect Finding: <ul style="list-style-type: none"> No work is proposed in the immediate vicinity of the building Given the property's use and intensity of development compared to other properties closer to the Hopkins Station, there is low potential for this property to be redeveloped Development catalyzed by the Project could potentially alter the setting of the property, but not to a degree that would affect its eligibility for the NRHP
HE-HOC-014	Minneapolis & St. Louis Railway Depot	9451 Excelsior Blvd, Hopkins	Eligible as an individual property	Criterion: A ^l Area of Significance: <ul style="list-style-type: none"> Transportation 	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Change to the property's setting from LRT infrastructure, including LRT tracks, catenary, and a new bridge over the Twin Cities & Western (TC&W) rail line and Excelsior Blvd. Construction vibration No Adverse Effect Finding:

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
					<ul style="list-style-type: none"> - The western approach of the LRT bridge over Excelsior Blvd. and the TC&W (originally M&StL) line has been shifted east so it begins 25 feet west of the depot, rather than a couple hundred feet to the west, to avoid blocking views to and from the depot and minimize effects to the depot's setting - To minimize potential visual effects and avoid an adverse visual effect, Project infrastructure within the adjacent depot will be designed in accordance with the <i>SOI's Standards</i> and undergo design review by MnHPO as stipulated in the MOA - Recreational trail between LRT tracks and the depot, and the paved plaza area adjacent to the depot, will remain - Not noise or vibration sensitive, per FTA criteria; however, as stipulated in the MOA, a Construction Protection Plan will be prepared and implemented to protect the depot from harm during Project construction • Avoidance/minimization measures: <ul style="list-style-type: none"> - Implement Section 106 MOA^b measures
HE-SLC-009	Peavey-Haglin Experimental Concrete Grain Elevator	Hwys 100 and 7, St. Louis Park	Listed as an individual property (also a National Historic Landmark)	Criterion: C ^h Areas of Significance <ul style="list-style-type: none"> • Economics • Engineering 	<ul style="list-style-type: none"> • Effects Considered: <ul style="list-style-type: none"> - Change in access to/from the Cedar Lake Trail - Change to the property's setting, including: <ul style="list-style-type: none"> o Introduction of LRT tracks and catenary to adjacent railroad corridor o Construction of a traction power substation (TPSS) nearby - Noise and vibration from LRT operations^e - Construction vibration • No Adverse Effect Finding: <ul style="list-style-type: none"> - The LRT guideway that passes the elevator will be located within the existing railroad corridor, but across the existing railroad tracks from the elevator so it does not infringe on the elevator property or its immediate setting - While a TPSS will be located in the vicinity of the elevator, it will be located over 500 feet to the southwest, across the freight rail and LRT tracks from the elevator and will have a minimal effect on the setting of the elevator and views of it; however, as stipulated in the MOA the location of the TPSS will continue to go through design review to confirm no change in location - The trail and trail access near the elevator are maintained Not noise or vibration sensitive, per FTA criteria; however, per 36 CFR 800.10, to minimize harm to this NHL to the maximum extent possible, as stipulated in the MOA, a Construction

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
					<p>Protection Plan will be prepared and implemented to protect this property from harm during Project construction</p> <ul style="list-style-type: none"> Avoidance/minimization measures: <ul style="list-style-type: none"> Implement Section 106 MOA^b measures
HE-SLC-055	Hoffman Callan Building	3907 Hwy 7 St. Louis Park	Eligible as an individual property	<p>Criterion: C^a Area of Significance</p> <ul style="list-style-type: none"> Architecture 	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment nearby catalyzed by the Project around the West Lake Station No Adverse Effect Finding: <ul style="list-style-type: none"> No work is proposed in the immediate vicinity of the building. Given the property's location near the edge of the West Lake Station APE, there are many other properties closer to the station that present better opportunity for redevelopment to take advantage of the station Development catalyzed by the Project could potentially alter the setting of the property, but not to a degree that would affect its eligibility for the NRHP
HE-MPC-17102	Minikahda Club	3205 Excelsior Blvd Minneapolis	Eligible as an individual property	<p>Criterion: Cⁱ Area of Significance</p> <ul style="list-style-type: none"> Landscape Architecture 	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment nearby catalyzed by the Project around the West Lake Station Pedestrian and roadway improvements along north side of the Minikahda Club, near the club entrance Temporary easement over a small portion of the Minikahda Club driveway to remove existing crosswalk striping and place new striping on adjacent street right-of-way No Adverse Effect Finding: <ul style="list-style-type: none"> Project design revised to avoid adverse effect to the Minikahda Club by reconfiguring pedestrian access in the area to avoid property acquisition and destruction of a portion of the designed landscape <ul style="list-style-type: none"> Direct effects now limited to repaving and restriping the intersection at the entrance to the property Construction activities on the property are temporary, minor, and limited to paved areas, so it will not affect the historic landscaping; however, as stipulated in the MOA, a Construction Protection Plan will be prepared and implemented to protect this property from harm during Project construction Development catalyzed by the Project could potentially alter the setting of the club, but not to a degree that would affect its eligibility for the NRHP Avoidance/minimization measures:

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
					<ul style="list-style-type: none"> Implement Section 106 MOA^b measures
HE-MPC-1811	Lake Calhoun	Minneapolis	Eligible as a contributing element to the GRHD	Criteria: A & C ^h Areas of Significance <ul style="list-style-type: none"> Community Planning & Development Entertainment/Recreation Landscape Architecture 	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment nearby catalyzed by the Project around the West Lake Station Minor pedestrian and roadway improvements near the Lake Calhoun Playing Fields Changes in traffic and parking patterns around the Lake Calhoun Playing Fields related to West Lake Station access No Adverse Effect Finding: <ul style="list-style-type: none"> No changes to ability to use the park, or to landscaping Development catalyzed by the Project could potentially alter the setting of the playing fields, but not to a degree that would affect its contributions to the GRHD or its eligibility for the NRHP Project improvements in the vicinity of the park are minor in scale and in keeping with the design of existing public infrastructure (traffic signals, signage, pedestrian ramps, and lighting) and will have a negligible visual effect; however, as stipulated in the MOA, the design of street improvements will continue to go through design review to confirm no change in design or effect Traffic analysis indicates no change in access to this property and no significant changes in traffic and parking patterns or volumes in the vicinity of this property resulting from operation of the Project Avoidance/minimization measures: <ul style="list-style-type: none"> Implement Section 106 MOA^c measures
HE-MPC-1833	Cedar Lake Parkway	Minneapolis	Eligible as a contributing element to the GRHD	Criteria: A & C ^h Areas of Significance <ul style="list-style-type: none"> Community Planning & Development Entertainment/Recreation Landscape Architecture 	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Reconstruction of approximately 320 feet of the roadway and raising it approximately 8 inches or less to construct the shallow LRT tunnel and reconstruct the at-grade trail and freight crossing Change to the parkway's setting from the introduction of the following:^d <ul style="list-style-type: none"> LRT tracks and catenary to the railroad corridor that crosses the parkway Introduction of LRT tunnel portal and signal bungalow to railroad corridor north of the parkway Introduction of a TPSS to the railroad corridor south of the parkway Noise effects from operations related to LRT entering and exiting the tunnel^e No Adverse Effect Finding:

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
					<ul style="list-style-type: none"> - Cedar Lake Parkway will be reconstructed in its existing configuration with slight increase in elevation (less than 8 inches) and the railroad crossing will be shifted approximately 3 feet within rail corridor, which will result in a minimal, non-adverse change to the design and feeling of the parkway where it crosses the existing railroad corridor; however, the crossing, and all Project infrastructure within the parkway's setting, will be designed in accordance with the <i>SOI's Standards</i> and undergo design review by MnHPO as stipulated in the MOA - The parkway is not noise or vibration sensitive, per FTA criteria; however, as stipulated in the MOA, a Construction Protection Plan will be prepared and implemented to protect this property from harm during Project construction • Avoidance/minimization measures: <ul style="list-style-type: none"> - Implement Section 106 MOA^b measures
HE-MPC-1820	Cedar Lake	Minneapolis	Eligible as a contributing element to the GRHD	Criteria: A & C ^h Areas of Significance <ul style="list-style-type: none"> • Community Planning & Development • Entertainment/Recreation • Landscape Architecture 	<ul style="list-style-type: none"> • Effects Considered: <ul style="list-style-type: none"> - Change in the lake's setting due to the new Kenilworth Lagoon crossing - Potential modifications to a trail between 21st Street station and East Cedar Beach on Cedar Lake^b - Noise effects from LRT operations^e • No Adverse Effect Finding: <ul style="list-style-type: none"> - No direct effects to the lake; however, as stipulated in the MOA, a Construction Protection Plan will be prepared and implemented to protect this property from harm during Project construction - Design and visibility of the new bridge structures across the Kenilworth Lagoon will be minimized by their distance from the lake, the narrowness of the corridor in which they are visible, and by the intervening Burnham Road Bridge that further blocks them from view;^d however, the crossing, and all Project infrastructure within the parkway's setting, will be designed in accordance with the <i>SOI's Standards</i> and undergo design review by MnHPO as stipulated in the MOA - No moderate or severe noise effects identified for this property, per FTA criteria • Avoidance/minimization measures: <ul style="list-style-type: none"> - Implement Section 106 MOA^b measures

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
HE-MPC-6901	Park Board Bridge No. 4 / Bridge L5729	W. Lake of the Isles Pkwy over Kenilworth Lagoon Minneapolis	Eligible individually and as a contributing element to the GRHD and the LIRHD	<p>Criterion: C (individual)^c Area of Significance</p> <ul style="list-style-type: none"> • Engineering <p>Criteria: A & C (historic districts)^c Areas of Significance</p> <ul style="list-style-type: none"> • Community Planning & Development • Entertainment/ Recreation • Landscape Architecture 	<ul style="list-style-type: none"> • Effects considered: <ul style="list-style-type: none"> – Changes to the bridge's setting due to the design and visibility of the new bridges across the Kenilworth Lagoon^d • No Adverse Effect Finding: <ul style="list-style-type: none"> – No direct effects to the bridge – Potential adverse visual effect from the introduction of new Kenilworth Lagoon crossing into the setting of the bridge avoided by designing the new crossing in accordance with the <i>SOI's Standards</i> and design review by MnHPO as stipulated in the MOA • Avoidance/minimization measures: <ul style="list-style-type: none"> – Implement Section 106 MOA^b measures
HE-MPC-1825	Lake of the Isles Parkway	Minneapolis	Eligible as a contributing element to the GRHD and the LIRHD	<p>Criteria: A & C^c Areas of Significance</p> <ul style="list-style-type: none"> • Community Planning & Development • Entertainment/ Recreation • Landscape Architecture 	<ul style="list-style-type: none"> • Effects considered: <ul style="list-style-type: none"> – Changes to the parkway's setting due to the design and visibility of the new bridges across the Kenilworth Lagoon^d • No Adverse Effect Finding: <ul style="list-style-type: none"> – No direct effects to the parkway – Potential adverse visual effect from the introduction of new Kenilworth Lagoon crossing into the setting of the parkway avoided by designing the new crossing in accordance with the <i>SOI's Standards</i> and design review by MnHPO as stipulated in the MOA • Avoidance/minimization measures: <ul style="list-style-type: none"> – Implement Section 106 MOA^b measures
HE-MPC-1824	Lake of the Isles	Minneapolis	Eligible as a contributing element to the GRHD and the LIRHD	<p>Criteria A & C^c</p> <ul style="list-style-type: none"> • Areas of Significance • Community Planning & Development • Entertainment/ Recreation • Landscape Architecture 	<ul style="list-style-type: none"> • Effects considered: <ul style="list-style-type: none"> – Changes to the lakes setting due to the design and visibility of the new bridges across the Kenilworth Lagoon^d • No Adverse Effect Finding: <ul style="list-style-type: none"> – No direct effects to the lake; however, as stipulated in the MOA, a Construction Protection Plan will be prepared and implemented to protect this property from harm during Project construction – Potential adverse visual effect from the introduction of new Kenilworth Lagoon crossing into the setting of the lake avoided by designing the new crossing in accordance with the <i>SOI's Standards</i> and design review by MnHPO as stipulated in the MOA • Avoidance/minimization measures: <ul style="list-style-type: none"> – Implement Section 106 MOA^b measures

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
HE-MPC-6068	Frieda and Henry J. Neils House	2801 Burnham Blvd Minneapolis	Listed as an individual property	Criteria: C ^h Area of Significance • Architecture	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment catalyzed by the Project around the 21st Street Station Changes in access (traffic and parking) Construction vibration No Adverse Effect Finding: <ul style="list-style-type: none"> The house is located more than a city block from the Project alignment and no work is proposed in the immediate vicinity of this property that could result in vibration effects Redevelopment potential around the 21st Street Station is limited by existing zoning and station area plans indicate low potential for redevelopment Traffic analysis indicates no change in access to this property and no significant changes in traffic patterns or volumes in the vicinity of this property resulting from operation of the Project
HE-MPC-6766	Mahalia and Zacharia Saveland House	2405 W 22nd St Minneapolis	Eligible as an individual property	Criteria: C ^c Area of Significance • Architecture	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment catalyzed by the Project around the 21st Street Station Changes in access (traffic and parking) Construction vibration No Adverse Effect Finding: <ul style="list-style-type: none"> The house is located more than a city block from the Project alignment and no work is proposed in the immediate vicinity of this property that could result in vibration effects Redevelopment potential around the 21st Street Station is limited by existing zoning and station area plans indicate low potential for redevelopment Traffic analysis indicates no change in access to this property and no significant changes in traffic patterns or volumes in the vicinity of this property resulting from operation of the Project
HE-MPC-1796	Kenwood Parkway	Minneapolis	Eligible as a contributing element to the GRHD and the KPRHD	Criteria A & C ^{c,h} Areas of Significance: • Community Planning & Development • Entertainment/ Recreation • Landscape Architecture	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment catalyzed by the Project around the Penn and 21st Street stations Changes in access (traffic and parking) No Adverse Effect Finding: <ul style="list-style-type: none"> The Parkway is located more than a block from the Project alignment and traffic analysis indicates no significant changes in traffic patterns or volumes along the parkway resulting from operation of the Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
					<ul style="list-style-type: none"> Redevelopment potential around stations in the vicinity of the parkway is limited by existing zoning and other land use constraints, and station area plans indicate low potential for redevelopment that could affect the setting of the parkway
HE-MPC-6603	Frank W. and Julia C. Shaw House	2036 Queen Ave S Minneapolis	Eligible as an individual property	Criterion: C ^c Area of Significance <ul style="list-style-type: none"> Architecture 	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment catalyzed by the Project around the 21st Street Station Changes in access (traffic and parking) Construction vibration No Adverse Effect Finding: <ul style="list-style-type: none"> The house is located more than a city block from the Project alignment and no work proposed in the immediate vicinity of the property that could result in vibration effects Redevelopment potential around the 21st Street Station is limited by existing zoning and station area plans indicate low potential for redevelopment Traffic analysis indicates no change in access to this property and no significant changes in traffic patterns or volumes in the vicinity of this property resulting from operation of the Project
HE-MPC-1797	Kenwood Park	Minneapolis	Eligible as a contributing element to the GRHD	Criteria: A & C ^h Area of Significance <ul style="list-style-type: none"> Community Planning & Development Entertainment/ Recreation Landscape Architecture 	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment catalyzed by the Project around the Penn and 21st Street stations Changes to the park's setting from visibility of the Project Station access (traffic and parking) No Adverse Effect Finding: <ul style="list-style-type: none"> No changes in the ability to use the park Redevelopment potential around the Project stations in the vicinity of the park is limited by existing zoning and station area plans indicate low potential for redevelopment Traffic analysis indicates no change in access to this property, no direct access from the Penn Station, and no significant changes in traffic patterns or volumes along Kenwood Parkway resulting from operation of the Project
HE-MPC-06475	Kenwood Water Tower	1724 Kenwood Pkwy Minneapolis	Eligible individually and as a contributing element to the GRHD	Criterion: C (individual) ^h Area of Significance <ul style="list-style-type: none"> Engineering or Architecture Criteria: A & C (historic districts) ^h	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Possible development/redevelopment catalyzed by the Project around the Penn Station Change to the tower's setting from visibility of the Project Station access (traffic and parking) Construction vibration

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
				Areas of Significance <ul style="list-style-type: none"> Community Planning & Development Entertainment/ Recreation Landscape Architecture 	<ul style="list-style-type: none"> No Adverse Effect Finding: <ul style="list-style-type: none"> Redevelopment potential from the Penn Station in the vicinity of the water tower is limited by existing zoning and station area plans indicate low potential for redevelopment Project elements will be located in the vicinity of a former rail yard below the bluff on which the water tower is situated; therefore, Project elements will not affect the immediate setting of the water tower and minimally effect views from it. Traffic analysis indicates no change in access to this property, no direct access from the Penn Station, and no significant changes in traffic patterns or volumes along Kenwood Parkway resulting from operation of the Project The water tower is not a vibration sensitive property, per FTA criteria (operations), and, given its distance from Project elements, will not be subjected to vibration from construction
HE-MPC-8763	Mac and Helen Martin House	1828 Mt. Curve Ave Minneapolis	Eligible as an individual property	Criterion: B ^a Area of Significance <ul style="list-style-type: none"> Commerce 	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Change to the property's setting <ul style="list-style-type: none"> Seasonal views of lighting and signage improvements along a connection between Cedar Lake Trail and Kenwood Parkway No Adverse Effect Finding: <ul style="list-style-type: none"> Project elements (lights and signs) are small in scale and consistent with existing neighborhood elements, are located a half block from the Martin House and at the bottom of a hill, and will only be visible during non-leaf out periods in one viewshed from the property, so they will not change the setting of the house or cause any distinct changes to views from it
21HE0409 ^h	— ^m	Minneapolis	Eligible as an individual property	Criterion: D ⁿ	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Direct effects from Project construction No Adverse Effect Finding: <ul style="list-style-type: none"> Project avoids this archaeological site; however, as stipulated in the MOA, a Construction Protection Plan will be prepared and implemented to protect this property from harm during Project construction Avoidance/minimization measures: <ul style="list-style-type: none"> Implement Section 106 MOA^b measures
HE-MPC-6641	William Hood Dunwoody Industrial Institute	818 Dunwoody Blvd., Minneapolis	Eligible as an individual property	Criterion: A ^l Area of Significance: <ul style="list-style-type: none"> Education 	<ul style="list-style-type: none"> Effects Considered: <ul style="list-style-type: none"> Changes to the property's setting <ul style="list-style-type: none"> Views of pedestrian lights and ramps added to sidewalks along a portion Dunwoody Blvd. on the south side of the

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria & Area of Significance	Effects Considered for No Adverse Effect Finding and avoidance/minimization/mitigation measures
					<p>Institute's parking lot and its driveway. The center median (island) in the street in front of the building will be modified</p> <ul style="list-style-type: none"> ○ The curb cut for the Institute's driveway along Dunwoody Blvd. will be reconstructed <ul style="list-style-type: none"> • No Adverse Effect Finding: <ul style="list-style-type: none"> – Construction activities on the site are limited to reconstructing a curb cut that provides access to the driveway that is part of the eligible property, which will result in no change to property itself; to avoid an adverse visual effect Project infrastructure within the adjacent historic property will be designed in accordance with the <i>SOI's Standards</i> and design review by MnHPO as stipulated in the MOA • Avoidance/minimization measures: <ul style="list-style-type: none"> – Implement Section 106 MOA^b measures

^a Mead & Hunt, 2010.

^b A Section 106 MOA is a legally binding document that commits FTA and the Council to implement measures to avoid, minimize and/or mitigate adverse effects on historic properties. For information on avoidance/minimization/mitigations measures specific to an individual historic property or district, please see the Section 106 MOA in Appendix H.

^c Mead & Hunt, 2014.

^d Assessing visual impacts under NEPA and potential visual impacts to inform a determination of effect under Section 106 are two separate processes that may have similar or different conclusions. The results of an evaluation of impacts to visual quality and aesthetics per NEPA can be found in Section 3.7.

^e Under FTA guidance, historic properties are designated as noise or vibration sensitive depending on the land use of the property, not their designation as historic. Properties of national significance with considerable outdoor use required for site interpretation would be in Category 1. Historic properties that are currently used as residences would be in Category 2. Historic buildings with indoor use of an interpretive nature involving meditation and study would be in Category 3, including museums, significant birthplaces and buildings in which significant historical events occurred. Most downtown areas have buildings which are historically significant because they represent a particular architectural style or are prime examples of the work of a historically significant designer. If the buildings or structures are used for commercial or industrial purposes and are located in busy commercial areas, they are not considered noise or vibration sensitive and the noise and vibration impact criteria do not apply. Similarly, historic transportation structures, such as terminals and railroad depots, are not considered noise or vibration sensitive land uses. See Appendix K of this Final EIS for additional information.

^f The SOI's Standards (36 CFR Part 68) are a series of standards for maintaining, repairing, and replacing historic materials, as well as designing new additions or making alterations. The SOI's Standards offer four distinct approaches to the treatment of historic properties including preservation, rehabilitation, restoration, and reconstruction, with guidelines for each. Federal agencies use the SOI's Standards and appropriate Guidelines to facilitate their preservation responsibilities. More specific information about the SOI's Standards can be found at: <http://www.nps.gov/tps/standards.htm>.

^g This inventory number replaces inventory number XX-RRD-010 used in previous documentation and encompasses previously inventoried segments covering the line within Hennepin County, including HE-OSC-048; HE-BPC-0084; HE-CRC-0238; HE-RBC-0304; HE-MPC-16389.

^h NR-SHPO

ⁱ FTA and MnHPO. 2012. *Section 106 Programmatic Agreement Between the Federal Transit Administration and The Minnesota State Historic Preservation Office Regarding the Construction of the Interchange Project Minneapolis, Minnesota*. This agreement documents the stipulations with which the Interchange Project will be implemented in order to take into account the effects of the undertaking on historic properties.

^j Summit Envirosolutions, 2010.

^k This table also includes contributing properties to the Grand Rounds Historic District because they are discrete units, each with unique attributes and characteristics, which will be affected differently by the Southwest LRT Project.

^l Hess, Roise and Company, 2012.

^m This property is considered a sensitive historic property under Section 304 of the National Historic Preservation Act of 1966, as amended. In accordance with Section 304, information on this sensitive historic property may cause a significant invasion of privacy and/or put the property at risk to harm and is not included in this document. Names, locations, and areas of significance of archaeological sites are not disclosed to help preserve the property.

ⁿ 10,000 Lakes Archaeology, LLC, Archaeological Research Services, Archaeo-Physics, LLC, and Merjent, Inc., 2014.

3.5.3.1 Architecture/History Properties

The 28 architecture/history properties identified within the Project's architecture/history APE include seven historic districts; 11 properties that are individually eligible for or listed in the NRHP, one of which is also an NHL; two properties that are both individually eligible for the NRHP and are also eligible as contributing properties to historic districts; and eight properties that are eligible as contributing elements to NRHP eligible historic districts.²⁷ Exhibits 3.5-1 through 3.5-3 illustrate the locations of these properties.

3.5.3.2 Archaeological Properties

Studies identified three NRHP-eligible archaeological sites within the Project's archaeological APE. Due to the sensitive nature of archaeological properties, Exhibits 3.5-4 and 3.5-5 illustrate the archaeological APE but do not depict the exact location of any archaeological sites or materials.²⁸

3.5.4 Environmental Consequences

This section identifies the long-term and short-term direct and indirect effects to historic properties from the Project. Direct effects are those that physically alter, damage, or destroy all or part of the historic property, as well as ownership changes. Indirect effects include changes in a property's use or of physical features within the property's setting that contribute to its historic significance; the introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features; or neglect of the property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization (36 CFR Part 800.5).

In accordance with 36 CFR Part 800.5, FTA, in consultation with the MnHPO and other consulting parties, reviewed Project elements and applied the criteria for an adverse effect under Section 106 to determine if the Project would result in any adverse effects to historic properties within the Project's APEs. This consultation considered anticipated long-term or short-term direct and indirect effects on the identified architecture/history and archaeological properties from construction and operation of the Project. See Section 3.5.1.3 for a description of the criteria and process used to reach a determination of effect. Tables 3.5-2 and 3.5-3 summarize potential effects on architecture/history and archaeological properties considered; the rationale for the finding of effect for each property, as determined through the Section 106 process; and measures that have been, or will be, integrated into the Project's design to avoid and minimize effects, as well as mitigate adverse effects, on historic properties. These measures are documented in the Project's Section 106 MOA. A detailed discussion of the Project's effects on each historic property, including the rationale and final finding of effect for each property, and the final Section 106 determination of effect of the Project on historic properties as a whole are contained in the Assessment of Effects report in Appendix H.

3.5.5 Mitigation Measures

This section describes the measures the Project will implement to resolve the Project's adverse effects, including measures to avoid, minimize, or mitigate adverse effects. These measures were developed by FTA and the Council in consultation with the MnHPO and other consulting parties. The Project's measures to resolve adverse effects, including avoidance, minimization, and mitigation measures, are specified in the Project's Section 106 MOA (Appendix H) and summarized in Tables 3.5-2 and 3.5-3.

Based on results of the effects assessments and implementation of the measures included in the Section 106 MOA, FTA has determined, in consultation with the MnHPO and other consulting parties, that the Project will

²⁷ The "Kenilworth Corridor" is not a historic or federally protected property unto itself, but rather is a geographical area reference that contains portions of Section 106 historic and Section 4(f) properties (e.g., Kenilworth Channel/Lagoon and Cedar Lake Parkway).

²⁸ These properties are considered sensitive historic resources under Section 304 of the NHPA, as amended. In accordance with Section 304, information on these sensitive historic resources may cause a significant invasion of privacy and/or put the resources at risk to harm and is not included in this document. Names, locations, and areas of significance of archaeological sites are not disclosed to help preserve these sensitive resources.

have No Adverse Effect on 26 historic properties and an Adverse Effect on five properties, including two archaeological sites, one historic district, one contributing property to that historic district, and one property individually listed in the NRHP. Due to the Project's adverse effect on these five properties—Sites 21HE0436 and 21HE0437; the Grand Rounds Historic District; the Kenilworth Lagoon as a contributing property to the Grand Rounds Historic District; and the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot—it has been determined that the undertaking will have an Adverse Effect on historic properties.

3.5.5.1 Architecture/History Properties

Following is a summary of the measures specified in the Project's Section 106 MOA that the Project will implement to mitigate the Project's effects on architecture/history properties.

Adverse Effect. The Project will have an adverse effect on the Kenilworth Lagoon and the Grand Rounds Historic District, of which the Kenilworth Lagoon is a contributing element. Measures to avoid, minimize, and mitigate the adverse effect on the Lagoon and the historic district are included in the Section 106 MOA (Appendix H) and summarized below.

Mitigation. Install a parapet wall and rail damper on the LRT bridge over the waterway to mitigate the moderate noise impact at the Kenilworth Lagoon (see Section 3.12).

Mitigation. Rehabilitate/Reconstruct WPA Rustic Style Retaining walls to minimize and mitigate the direct physical and indirect visual adverse effects on the Grand Rounds Historic District, including the Kenilworth Lagoon, from the construction of the Project's crossing of the Kenilworth Lagoon.

Mitigation. Design Project elements within and adjacent to the Grand Rounds Historic District, including the Kenilworth Lagoon, in accordance with the *SOI's Standards* (36 CFR Part 68), to be reviewed by the MnHPO and consulting parties, to further minimize the direct physical and indirect visual adverse effects from the construction of the Project's crossing of the Kenilworth Lagoon and introduction of additional Project elements into and adjacent to the district.

Mitigation. Develop a Construction Protection Plan detailing the measures to be implemented during Project construction to avoid direct physical and indirect adverse effects from Project construction on the Grand Rounds Historic District, including the Kenilworth Lagoon.

Mitigation. Prepare guidance for future preservation activities within the portion of the Grand Rounds Historic District: Canal System, including adjacent parkland, extending from the north end of Lake Calhoun to the east end of Cedar Lake, and including the entirety of the Lake of the Isles Park and Kenilworth Lagoon elements to mitigate the direct physical and indirect visual adverse effects to the Grand Rounds Historic District. This guidance will take the form of two plans: (1) a preservation plan will include an overall vision for historic preservation of this portion of the historic district, strategies to guide historic preservation efforts to achieve the overall vision, and objectives for implementing each strategy and (2) a treatment plan will be prepared to guide preservation activities for up to twelve different historic features, or feature types within the planning area. The plans shall be prepared in accordance with the *SOI's Standards* (36 CFR Part 68); the *SOI's Standards for Preservation Planning* (NPS, 1983); and the NPS's *Guidelines for the Treatment of Cultural Landscapes* (NPS, 2016a), *Preservation Briefs* (NPS, 2016b), and *Preservation Tech Notes* (NPS, 2016c).

Adverse Effect. The Project will have an adverse effect on the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot. Measures to avoid, minimize, and mitigate the adverse effect on the depot are included in the Section 106 MOA (Appendix H) and summarized below.

Mitigation. Revised the Project design to relocate the crossover location 3,420 feet west along the alignment to allow the noise wall to shift at least 240 feet west, and avoid the adverse visual effect.

Mitigation. Revised the Project design to relocate the signal bungalow to the alternate crossover location to further avoid adverse visual effects from a partial blockage of views between the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot and railroad line that would diminish the setting of the depot and its visual connection and association with the railroad line. For most historic properties,

there will be no adverse effects as a result of Project construction activities. For architecture/history properties where effects from construction are possible, Construction Protection Plans will be developed and implemented to avoid short-term adverse effects to those properties (see Tables 3.5-2 and 3.5-3). Based on the effects assessment and implementation of the Construction Protection Plans, there will be no adverse effects from Project construction activities.

3.5.5.2 Archaeological Properties

Following is a summary of the measures specified in the Project's Section 106 MOA that the Project will implement to mitigate the Project's effects on archaeological properties.

Adverse Effect. The Project will have an adverse effect on two archaeological sites, Sites 21HE0436 and 21HE0437, due to destruction of the sites from construction. Mitigation for these adverse effects is included in the Section 106 MOA (Appendix H) and summarized below.

Mitigation. Conduct a Phase III Archaeological Data Recovery of Sites 21HE0436 and 21HE0437.

Mitigation. Design of the Royalston Station will incorporate interpretation of the sites, based on the results of the Phase II investigations and allowing for the incorporation of any additional information from the Phase III data recovery.

Mitigation. Develop an interpretative plan for the interpretation in conformance with the *Standards and Practices for Interpretive Planning* from the National Association for Interpretation (NAI) (NAI, 2008) and *Creating Outdoor Trail Signage* technical leaflets (Miller and Novodorsky, 2008a and 2008b).

To avoid possible effects from Project construction on Site 21HE0409, a Construction Protection Plan will be developed and implemented to avoid short-term adverse effects to that archaeological site. Based on the effects assessment and implementation of the Construction Protection Plan for Site 21HE0409, there will be no adverse effects from Project construction activities (see Tables 3.5-2 and 3.5-3).

3.6 Parks, Recreation Areas, and Open Spaces

This section describes the long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on parks, recreation areas, and open spaces (see Section 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis; an assessment of existing parks, recreation areas, and open spaces potentially affected by the Project; a description of the anticipated impacts related to parks, recreation areas, and open spaces; and a description of mitigation measures to implement with the Project.

3.6.1 Regulatory Context and Methodology

This section describes regulatory context and methodology for the evaluation of parks, recreation, and open space and includes a summary of relevant regulations, an overview of the methodology, and a description of the study area utilized for the analyses completed as part of the parks, recreation, and open space evaluation. Publicly owned and publicly accessible parks and recreation areas of local significance are protected under Section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. 303(c). Chapter 6 documents the Project's compliance with Section 4(f). The park and recreation properties that are protected under Section 4(f) and addressed in Chapter 6 are identified in Section 3.6.2.

Section 6(f) of the Land and Water Conservation Fund Act of 1965 stipulates that any land or facility planned, developed, or improved with the Land and Water Conservation Fund Act of 1965 funds cannot be converted to uses other than parks, recreation, or open space unless land of at least equal fair market value and reasonably equivalent usefulness is provided. Anytime a transportation project would cause such a conversion, regardless of funding sources, such replacement land must be provided.

The parks, recreation areas, and open spaces study area (hereafter described in this section as "parks study area") is defined as the area within 350 feet of the proposed light rail alignment centerline. The 350-foot distance was used because 350 feet is the unobstructed screening distance for FTA noise impact assessments and will allow identification of potential noise impacts to park resources. Identification of the parks,

recreation areas, and open spaces was based on a review of electronic data (both planning documents and maps) from the cities of Minneapolis, St. Louis Park, Hopkins, Minnetonka, and Eden Prairie.

The assessment of impacts to parks, recreation areas, and open spaces described in this section is based on field observations and the current layouts of the park and recreational properties. Long-term direct impacts are defined as those that will result in a physical modification to existing parks, recreation areas, and open spaces. Long-term indirect impacts are those impacts that would occur later in time or are farther removed in distance than long-term direct impacts (40 CFR 1508.8). For this analysis, long-term indirect impacts are those that will result from the proximity of proposed light rail facilities to parks, recreation areas, and open spaces, including visual, noise, and access impacts (see Sections 3.7 and 3.12 and Chapter 4, respectively). In addition, long-term indirect impacts include potential impacts resulting from increased or accelerated development and redevelopment that could occur in proposed light rail station areas.

3.6.2 Affected Environment

This section describes the parks and recreation areas and open spaces located partially or fully within the parks, recreation areas, and open spaces study area. Table 3.6-1 briefly describes the parks, recreation areas, and open spaces in the study area (see Exhibits 3.6-1 and 3.6-2 for an illustration of the location of those properties). Table 3.6-1 also notes properties for which Section 4(f) regulations are applicable.²⁹ Section 4(f) properties and impacts to those properties are discussed and illustrated in Chapter 6. Bicycle and pedestrian facilities are discussed in Section 4.5.

TABLE 3.6-1

Summary Information about Parks, Recreation Areas, and Open Spaces in the Parks, Recreation Areas, and Open Spaces Study Area^a

Property Name	Property Size	Owner	Location and Description	Section 4(f) Property ^b
Purgatory Creek Park	5.2 acres	City of Eden Prairie	Located at 13001 Technology Drive in Eden Prairie; includes a 125-person-capacity pavilion, bicycle and walking trails, the Mayor Jean Harris Gathering Bridge, gardens, a dock, a fountain, the Eden Prairie Veterans' Memorial, the Lambert Pavilion, a 54-space parking lot, and restrooms.	Yes
Nine Mile Creek Conservation Area	61.8 acres	City of Eden Prairie	Composed of several properties in Eden Prairie, designated as a "Conservation Area" in the City of Eden Prairie Comprehensive Plan, which defines conservation areas as those areas that consist of large floodplain preservation areas, wetlands, bluffs, and sensitive woodland areas. One of the properties is located just east of Highway 212 and Flying Cloud Drive in Eden Prairie and one is just east of Flying Cloud Drive, north of Valley View Road. ^{d, e} As per the City's Comprehensive Plan, the primary purpose of the Nine Mile Creek Conservation Area is wetland and floodplain preservation, and it does not have a primary park/recreation use nor is it a designated wildlife/waterfowl refuge—if recreation use occurs on this property it is a secondary or incidental use (see Appendix I). Because the Nine Mile Creek Conservation Area does not primarily function as a recreational resource or wildlife/waterfowl refuge, nor is it officially designated as such by the City of Eden Prairie, FTA has determined Section 4(f) does not apply to this property. ^f	No ^c
Flying Cloud Dog Park	9.3 acres	City of Eden Prairie	Located at 7171 Flying Cloud Drive in Eden Prairie; includes an approximate one-acre fenced park that provides year-round use for off-leash dog exercise, a small parking lot, obstacle equipment for dogs, benches, and a portable toilet.	Yes

²⁹ All Section 4(f)-protected properties described in Table 3.6-1 are also addressed within Chapter 6.

Property Name	Property Size	Owner	Location and Description	Section 4(f) Property ^b
Unnamed open space A	2.95 acres	City of Minnetonka	<p>Composed of one generally naturally vegetated parcel located immediately east of Bren Road E. The City of Minnetonka's 2030 Comprehensive Plan (Figure IV-1) shows that the existing use of this parcel as "Open Space." However, this parcel's official plan designation in the City Minnetonka 2030 Comprehensive Plan (Figure IV-15) is "Mixed Use" (and not "Parks" or "Open Space"). A paved trail, which is part of a trail network that serves the Opus development site,^g crosses the parcel in an east-west manner at a point approximately 830 feet north of the intersection of Bren Road East and Red Circle Drive. The property also contains an easement owned by Hennepin County for drainage purposes.</p> <p>Based on deed/title information on this property there are no park/recreation-related easements or other park/recreational legal agreements attached to this property. Because Unnamed Open Space A does not primarily function as a recreational resource or wildlife/waterfowl refuge, nor is it officially designated as such by the City of Minnetonka, FTA has determined Section 4(f) does not apply to this property.^f (As noted, the trail network is considered a separate Section 4(f) resource).^{d, f, h, g}</p>	No
Unnamed open space B	49.1 acres	City of Minnetonka	<p>Composed of one predominantly wooded and wetland parcel, generally located between Bren Road W on the south, Smetana Road on the north, Green Circle Drive on the east, and private residential and commercial properties on the west. This parcel is designated as "Open Space," in the City Minnetonka 2030 Comprehensive Plan (Figure IV-5), which notes that the purpose of "open spaces" is to preserve as many of the natural features of the land as possible. While this open space parcel doesn't contain a park/recreation-related easement, there is a covenant restricting the future use of this parcel to "parkland" or "open space," therefore FTA has made a conservative determination that Section 4(f) may apply to this parcel.^{d, i}</p> <p>This open space contains segments of paved trails that are part of a network of trails that serve the Opus development site.^g Those trail segments cross the south part of the parcel just north of Bren Road W and traverse the eastern boundary of the parcel between Bren Road W and Smetana Rd. The primary recreational activities occurring on this parcel are associated with the trails, including walking, running, bicycling, cross country skiing, nature and wildlife observation, and the like. There may be ancillary passive and active recreation activities occurring on the open space areas, where trail users stop to use the open space areas for other activities.</p> <p>In summary, because recreation is a primary purpose and function of this open space, FTA has determined Section 4(f) applies to this property.</p>	Yes
Overpass Skate Park	0.4 acre	City of Hopkins	Located at 100 Washington Avenue South in Hopkins under the Highway 169 bypass; includes a variety of features for skateboarders, inline skaters, and BMX bikers. The park is seasonal and operates as weather permits, generally extending from May through October.	Yes
Minnehaha Creek Open Space	4.8 acres	City of St. Louis Park	<p>Composed of two non-contiguous parcels located south of the HCRRA rail corridor and adjacent to Minnehaha Creek, east and west of Meadowbrook Road, that have a conservation easement owned by the Minnehaha Creek Watershed District. The parcels are 1.9 and 2.9 acres, respectively. The eastern parcel abuts Isaak Walton Creekside Park, which has a boat ramp onto Minnehaha Creek.</p> <p>The conservation easement is to the Minnehaha Creek Watershed District, which was created exclusively for the purposes of water resource protection, conservation, and management, including the protection, conservation, and management of related lands. The purpose of the conservation easement is to protect the following conservation values: protect water quality and provide habitat; and protect and enhance water quality and flood control.^d</p> <p>In summary, because this open space conservation easement does not primarily function as a recreational resource or as a wildlife/waterfowl refuge, nor is it designated as such within the easement owned by the Minnehaha Creek Watershed District, FTA has determined Section 4(f) does not apply to this property.^f</p>	No
Edgebrook Park	1.3 acres	City of St. Louis Park	Located at 3920 Pennsylvania Avenue South in St. Louis Park, immediately north of and paralleling the Cedar Lake Regional Trail, generally between Brookview Drive and Taft Avenue South; includes a play structure, basketball courts, and access to Cedar Lake Regional Trail. During the winter, the park houses a lighted skating rink.	Yes
Isaak Walton League Creekside Park	1.8 acres	City of St. Louis Park	Located at 7341 Oxford Street in St. Louis Park, immediately north of Minnehaha Creek; includes a canoe landing, an off-street parking lot, trail access, and outdoor cooking grills.	Yes

Property Name	Property Size	Owner	Location and Description	Section 4(f) Property ^b
Jorvig Park	0.6 acre	City of St. Louis Park	Located at 6100 West 37th Street in St. Louis Park, northwest of the intersection of Brunswick Avenue South and West 37th Street and immediately south of the Bass Lake Spur; includes a play structure, horseshoe pits, picnic tables, and outdoor cooking grills. The park also houses a relocated historic train depot (the Chicago, Milwaukee, St. Paul and Pacific Railroad Depot).	Yes
Lilac Park	2.7 acres	City of St. Louis Park	Located immediately north of the Bass Lake Spur and east of Highway 100; accessible via a service road that connects to Beltline Boulevard and via a connecting bicycle path; includes a relocated and restored "Beehive" stone structure that houses three non-functional fireplaces, limestone picnic tables, "council ring" and fire pit, bicycle racks, trash receptacles, and an information kiosk.	Yes
Alcott Triangle	0.3 acre	MPRB	Located at the junction of St. Louis Avenue and West 29th Street in Minneapolis; includes a bench, picnic table, and waste can.	Yes
Park Siding Park	1.4 acres	MPRB	Located between the Kenilworth Corridor, Dean Court, and West 28th Street in Minneapolis; includes a playground, picnic area, benches, bicycle parking, ornamental lighting and fencing, and a pergola seating area.	Yes
Kenilworth Channel/Lagoon	10.3 acres	MPRB	Located in Minneapolis; is an element of the Minneapolis Chain of Lakes Regional Park and Grand Rounds Scenic Byway; the channel connects Cedar Lake and Lake of the Isles and is utilized by non-motorized watercraft.	Yes
Cedar Lake Park	208.4 acres	MPRB	Located at Cedar Lake Parkway and Basswood Road in Minneapolis and is part of the Chain of Lakes Regional Park and Grand Rounds Scenic Byway. Cedar Lake makes up approximately 173 acres of Cedar Lake Park. The Cedar Lake Regional Trail traverses the northernmost portion of the park, crossing the existing freight rail tracks at-grade and then connecting to the Kenilworth Trail. Recreational activities within the park include boating, fishing, cross country skiing, skating, picnicking, hiking, running, and bicycling.	Yes
Bryn Mawr Meadows Park	51.6 acres	MPRB	Located at 601 Morgan Avenue South in Minneapolis; includes two baseball fields, two broomball rinks, cricket field, ice rink, 10-table picnic area, restroom facilities, soccer field, eleven softball fields, biking path, sports facility, tennis court, tot lot/playground, wading pool, and walking path.	Yes

^a All listed parks are of local significance, and are publicly owned and publicly accessible.

^b Section 4(f) applies to publicly owned, publicly accessible parks and recreation areas, as well as to Section 106 historic resources (regardless of ownership) and publicly owned wildlife and waterfowl refuges. Open spaces are not protected under Section 4(f), unless the primary purpose of the open space is recreation or to provide wildlife/waterfowl habitat; or the open space is an eligible historic resource. See Chapter 6 for a description of the criteria for protection of properties under Section 4(f) and a full description of anticipated impacts to Section 4(f) properties.

^c Nine Mile Creek Conservation Area was noted as a Section 4(f) resource in the Draft EIS, but there was a subsequent determination made by FTA in the Supplemental Draft EIS that Section 4(f) does not apply to the Nine Mile Creek Conservation Area because its primary purpose is not a park or recreation area but rather as a conservation area that is not a designated wildlife or waterfowl refuge (see 23 CFR 774.17 and *Section 4(f) Policy Paper* (Page 23, Question 1A)).

^d Property legal documents for the open spaces noted in Table 3.6-1 are provided in Appendix I.

^e The City of Eden Prairie owns a permanent easement for the purpose of scenic preservation on a private parcel in the vicinity of Flying Cloud Drive, north of Valley View Road, that is mapped by the City of Eden Prairie as part of the Nine Mile Creek Conservation Area (see Section 3.4 and PID No. 1211622240008).

^f Per 23 CFR 774.17 and the *Section 4(f) Policy Paper*, which states on Page 23 (Question 1A): Publicly owned land is considered to be a park, recreation area or wildlife and waterfowl refuge when: (1) the land has been officially designated as such by a federal, state, or local agency; and (2) the officials with jurisdiction over the land determine that its primary purpose is as a park, recreation area, or refuge. Primary purpose is related to a property's primary function and how it is intended to be managed. Further, recreation use that is secondary, incidental, dispersed, or not authorized does not qualify a property for Section 4(f) protection (FHWA, 2012c).

^g FTA has determined that the referenced trail network within the Opus commercial development area is a Section 4(f) property; see Section 4.5 and Chapter 6 for additional information on that trail network.

^h The City owns a perpetual easement for public right-of-way purposes over, under, and across the property.

ⁱ The certificate of title for this property states, among other conditions, that the City of Minnetonka is the fee simple owner of the land, "subject to the condition that above land shall be used solely for parkland and open space purposes and if such property shall not be used for any purpose other than parkland or open space purposes, said property shall revert to party first part, its successors and assigns" (Deed Document #1260614, with reversionary clause).

Notes: MPRB = Minneapolis Park and Recreation Board. See Exhibits 3.6-1 and 3.6-2 for an illustration of the location of the resources listed in this table.

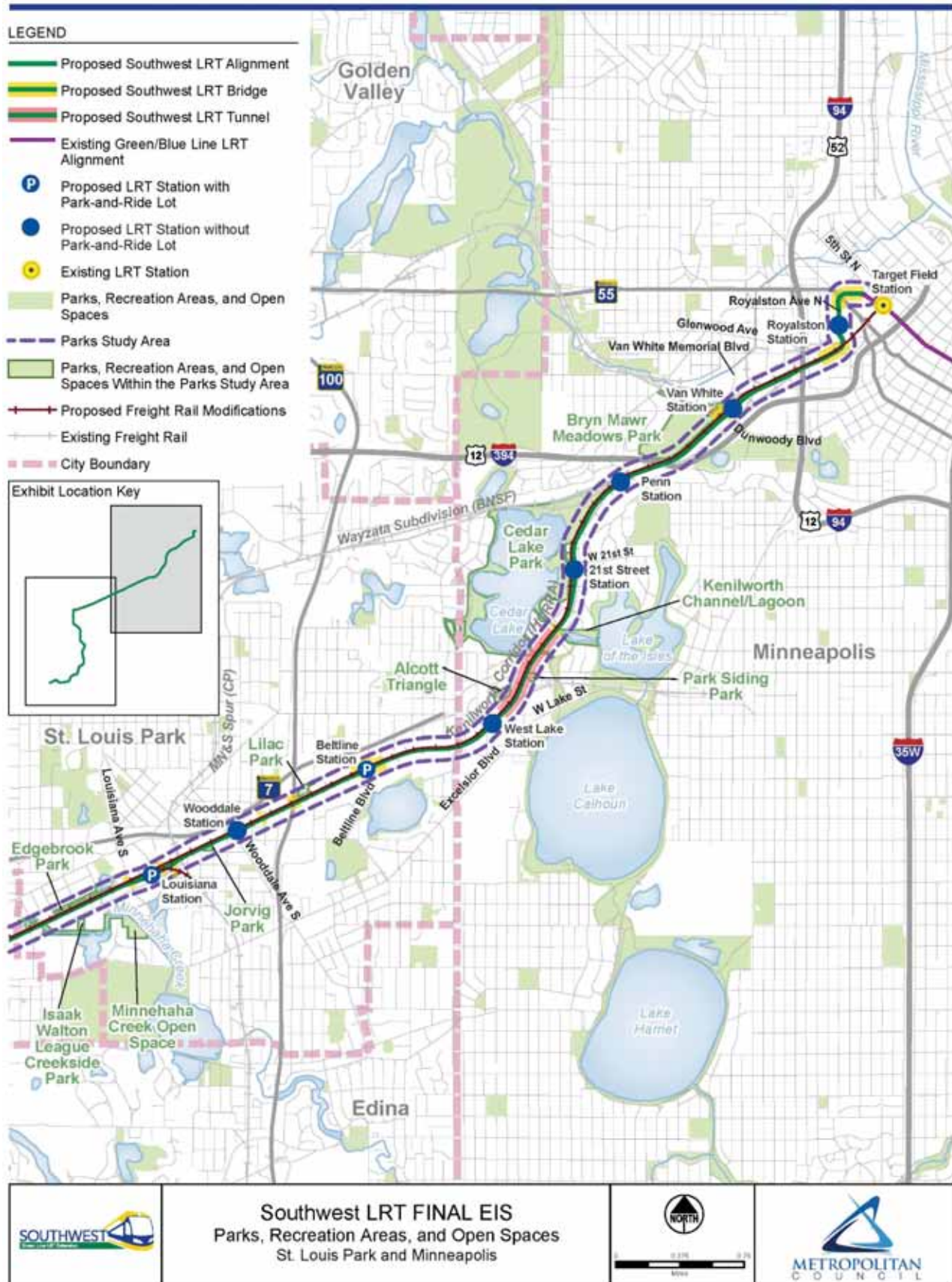
EXHIBIT 3.6-1

Parks, Recreation Areas, and Open Spaces



EXHIBIT 3.6-2

Parks, Recreation Areas, and Open Spaces



3.6.3 Environmental Consequences

Table 3.6-2 identifies the long-term and short-term direct and indirect impacts on parks, recreation areas, and open spaces from the Project; only those properties where impacts are anticipated are included in Table 3.6-2.

Under the Project, no long-term right-of-way will be acquired from Section 6(f) resources within the parks, recreation areas, and open spaces study area. Therefore, no properties planned, developed, or improved with funds from the Land and Water Conservation Fund Act of 1965 will be converted by the Project to non-outdoor recreation use, and this issue is not discussed further in this Final EIS (see Section 6(f) Technical Memorandum listed in Appendix C).

TABLE 3.6-2

Summary of Impacts to Parks, Recreation Areas, and Open Spaces in the Study Area^a

Property Name	Long-Term Direct Impacts	Long-Term Indirect Impacts	Short-Term Impacts
Purgatory Creek Park	No long-term direct impacts	Changes to visual setting due to installation of elevated LRT line adjacent to park; no related long-term adverse effects to the park	Acquisition of temporary construction easement; temporary changes to access, noise, and visual setting conditions during construction
Nine Mile Creek Conservation Area	No long-term direct impacts ^b	Changes to visual setting due to installation of LRT line adjacent to the property	Temporary changes to visual setting and noise conditions during construction; potential for construction activities within the parcel
Unnamed open space A	Acquisition of entire 2.95-acre open space parcel to accommodate installation of LRT tracks and station platform; trail realignment	No long-term indirect impacts	No short-term impacts outside of the area to be acquired
Unnamed open space B	Acquisition of 2.5 acres to accommodate installation of LRT tracks; trail realignment	No long-term indirect impacts	No short-term impacts outside of the area to be acquired
Overpass Skate Park	No long-term direct impacts	Changes to visual setting and noise conditions due to installation of LRT line adjacent to park; no related long-term adverse effects to the park	Temporary changes to visual setting and noise conditions during construction
Minnehaha Creek Open Space	No long-term direct impacts	Changes to visual setting and noise conditions due to installation of LRT line adjacent to park; no related long-term adverse effects to the park	Temporary changes to visual setting and noise conditions during construction
Edgebrook Park	No long-term direct impacts	Changes to visual setting and noise conditions due to installation of LRT line adjacent to park; no related long-term adverse effects to the park	Temporary changes to visual setting and noise conditions during construction
Jorvig Park	No long-term direct impacts	Changes to visual setting and noise conditions due to installation of LRT line adjacent to park; no related long-term adverse effects to the park	Temporary changes to visual setting and noise conditions during construction
Lilac Park	No long-term direct impacts	Changes to visual setting and noise conditions due to installation of LRT line adjacent to park; no related long-term adverse effects to the park	Temporary changes to visual setting and noise conditions during construction
Park Siding Park	No long-term direct impacts	Changes to visual setting and noise conditions due to installation of LRT line adjacent to park; no related long-term adverse effects to the park.	Temporary changes to visual setting and noise conditions during construction
Kenilworth Channel/Lagoon	LRT improvements and modifications to the freight rail and trail alignments will occur on approximately 0.3 acre; no long-term adverse effect to recreational features of the park; the Council will conclude consultation on the design of the proposed bridges prior to construction	Changes to visual setting and noise conditions due to installation of LRT line across the channel; no related long-term adverse effects to the park	Temporary closure of channel/user detour during construction; temporary changes to access, visual setting and noise conditions during construction. BMP will be developed and implemented during removal of the existing bridges and construction of the new bridges

Property Name	Long-Term Direct Impacts	Long-Term Indirect Impacts	Short-Term Impacts
Cedar Lake Park	New segment of sidewalk to be constructed within the park near East Cedar Beach; realignment of a portion of North Cedar Lake Regional Trail in park; no long-term adverse effect to recreational features of the park	No long-term indirect impacts	Acquisition of temporary construction easement to accommodate trail reconstruction within the park
Bryn Mawr Meadows Park	Acquisition of 0.4-acre permanent maintenance easement to accommodate replacement trail bridge; modification of trail alignments in the park; no long-term adverse effect to recreational features of the park; the Council will continue consultation with MPRB to determine realignment of trails within the park, and conclude consultation with MPRB on the design of the proposed new bridge prior to construction	Modification to the park's visual setting due to the replacement trail bridge; improved transit and trail access; no related long-term adverse effects to the park	Acquisition of temporary construction easement and temporary project activities within the park related to construction of replacement bridge and realignment of trails; temporary trails will maintain connectivity during construction

^a Only those properties where impacts are anticipated are included in Table 3.6-2. The visual quality analysis and mitigation measures for visual quality impacts are described in Section 3.7.4, and the detailed noise analysis and mitigation measures for noise impacts are described in Section 3.12.4.

^b Approximately 0.23 acre of a private parcel in the vicinity of Flying Cloud Drive, north of Valley View Drive will be acquired by the Council for the proposed light rail alignment (see Section 3.4 and PID No. 1211622240008).

3.6.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term parks, recreation areas, and open spaces impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Section 3.6.3 for additional information on the identified parks, recreation areas, and open spaces impacts, avoidance measures and BMPs). Mitigation measures for indirect impacts to park, recreation areas, and open spaces (visual, noise, access) are addressed in Sections 3.7 and 3.12 and in Chapter 4.

Mitigation actions proposed for parks and recreation properties that are protected under Section 4(f) are specified in the Final Section 4(f) Evaluation located in Chapter 6 of this Final EIS.

3.6.4.1 Long-term Mitigation Measures

Impact. Permanent acquisition of parks and open space property.

Mitigation. When permanently acquiring property at Bryn Mawr Meadows Park and two open spaces in Minnetonka, the Council will provide property owners with compensation in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act).

3.6.4.2 Short-term Mitigation Measures

Impact. Temporary acquisition of park and opens space property.

Mitigation. When acquiring property for temporary construction purposes (i.e. temporary easement) at Purgatory Creek Park, Cedar Lake Park, and Bryn Mawr Meadows Park, the Council will provide property owners with compensation in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act).

Impact. Construction-related disturbances.

Mitigation. FTA, the property owners, and the Council have initiated efforts to help avoid, minimize, and mitigate impacts to Purgatory Creek Park, Nine Mile Creek Conservation Area, two unnamed open spaces in Minnetonka, Overpass Skate Park, Minnehaha Creek Open Space, Edgebrook Park, Jorvig Park, Lilac Park, Park Siding Park, Kenilworth Channel/Lagoon, and Bryn Mawr Meadows

Park, including participation in coordination meetings. A Construction Communication Plan will be developed that will include coordination with the park owners, advance notice of construction activities, and highlighting road, sidewalk, and trail closures and detour routes.

Mitigation. Areas and features of parks and recreation areas that are altered or disturbed due to construction activities will be restored to original conditions or better in coordination with the jurisdictional owner. This mitigation measure applies to potential short-term direct impacts associated with construction-related disturbances at Purgatory Creek Park, Nine Mile Creek Conservation Area, Minnehaha Creek Open Space, Kenilworth Channel/Lagoon, Cedar Lake Park, and Bryn Mawr Meadows Park, as well as regional and local trails.

3.7 Visual Quality and Aesthetics

This section describes the long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on visual quality and aesthetics (see Section 3.17 for cumulative impacts). The visual environment is the setting of an area, including the resources that affect an observer's visual experience of an area. Visual character is a composite description of the visual resources, considering the form, scale, and diversity of man-made and natural landscape components. Visual quality is the value placed on the visual environment according to viewer observation and preference. This section includes an overview of the regulatory context and methodology used for the analysis; an assessment of existing built environment; a description of the anticipated impacts related to visual quality and aesthetics; and a description of mitigation measures to implement with the Project. The analysis presented in this section is a summary of the detailed analysis of visual quality and aesthetic impacts presented in Appendix J. The exhibits referred to in this section are located in Appendix J, Attachment J-1, Visual Resources Exhibits.

3.7.1 Regulatory Context and Methodology

This visual resources analysis was prepared using the standardized approach for visual impact assessment documented in the FHWA's *Visual Impact Assessment of Highway Projects* (FHWA, 1988). The FTA does not have specific visual assessment guidelines, and defers to the FHWA guidance on visual impact assessment. Federal regulations require visual impacts to be addressed for Section 106 of the National Historic Preservation Act of 1966 (Section 106) for those resources where setting is a qualifying characteristic of protected historic resources (see Section 3.5 and Appendix J for further discussion of visual impacts on historic properties). Visual impacts to a protected Section 106 resource where setting is a qualifying characteristic of the protected resource are also required to be addressed under Section 4(f) of the Department of Transportation Act of 1966 (Section 4(f)) (see Appendix I, Final Section 4(f) Evaluation, for additional information on the Section 4(f) process and analysis).

Implementation of the FHWA visual impact assessment methodology includes the following steps, which are described in more detail below (see Section 2 of Appendix J for additional information on this methodology):

- Define the Project setting and the vicinity within which the Project is likely to be visible
- Determine who has views of the Project
- Divide the Project area into "visual assessment units" (VAUs)
- Identify key viewpoints for visual assessment
- Determine and document the existing visual quality of the views from the viewpoints (this is where visual sensitivity is determined)
- Prepare simulations depicting the views from the viewpoints as they appear with the Project in place
- Based on a review of the design files, plan sheets, team evaluations and consultation, and simulations, assess the changes to existing visual resources
- Assess the Project's level of impact at each viewpoint, taking into account the visual changes and viewer sensitivity

- Identify methods to mitigate adverse visual impacts

A visually sensitive area is one upon which a human value has been placed for reasons of historic importance, natural beauty, or other reasons. Examples of visually sensitive areas in the study area are:

- Parks and other recreational areas, such as Purgatory Creek Park and the Kenilworth Channel/Lagoon
- The wooded hillside on the west side of the Claremont Apartments in the City of Minnetonka
- The Minnesota River Bluffs, Cedar Lake, and Kenilworth Regional Trails
- Segments of the Kenilworth corridor visible from nearby residential areas

The Project's visual quality study area extends up to one-half mile on either side of the alignment. The visual quality study area was divided into VAUs, according to the cohesiveness of land use and development patterns, while also taking into account the local city's jurisdictional boundaries. The six VAUs and the exhibits on which they are mapped include Eden Prairie (Exhibit J-1), North Eden Prairie/Minnetonka/South Hopkins (Exhibit J-6), Hopkins (Exhibit J-9), St. Louis Park (Exhibit J-12), Kenilworth Corridor (Exhibit J-17), and Minneapolis Downtown Fringe (Exhibit J-24). A total of 19 viewpoints were selected for assessment. The locations of these viewpoints are indicated on Exhibits J-1, J-6, J-9, J-12, J-17, and J-24.

Viewers are the people who are likely to observe the visual environment. The major groups of viewers who would be affected by the new visual elements of the Project have been identified for each of the visual quality study area's six VAUs, which are described below. Such groups might include residents, workers who are employed in the VAU, visitors who come to the area, transit riders, pedestrians, cyclists, or roadway users (including motorists, transit riders, pedestrians, and cyclists) who travel in or through the VAU.

Following is a description of the key elements of the analysis used to determine how the Project will directly affect its visual environment—the results of that analysis are summarized in Section 3.7.3.1:

- **Visual Quality.** The existing *visual quality* of each view was evaluated for the existing conditions and for the view as it would appear with the Project in place. The *visual quality* of the views were assessed in terms of their vividness, intactness, and unity, which are further defined in Appendix J. Each of these dimensions was scored using a scale from 1 to 7, where the lowest score (i.e., "1") represents very low visual quality and the highest score (i.e., "7") represents very high visual quality. The overall level of visual quality for each view was characterized in terms of this seven level scale. The terms used to describe the existing visual quality within this seven-level scale included Very Low, Low, Moderately Low, Medium, Moderately High, High, and Very High. Based on the evaluation conducted, all of the views in the Project area fell into the middle zone of this scale, with no views having a level of visual quality lower than Moderately Low or higher than Moderately High. The detailed assessments are provided in Appendix J.
- **Degree of Visual Change.** Comparison of the *visual quality* ratings for the existing and with-Project conditions for each view provided a basis for determining the *degree of visual change* resulting from the Project, which are summarized for each viewpoint within Table 3.7-1. The process of determining the *degree of visual change* employed the following evaluation methods:
 - The *degrees of visual change* were classified as low, moderate, and high:
 - **Low degree of visual change** is assigned where the visual quality will decrease in the range of 0.1 through 0.5 points
 - **Moderate degree of visual change** would occur where the visual quality will decrease in the range of 0.6 and 1.0 points
 - **High degree of visual change** would occur where the decline in visual quality has been assessed as greater than 1.0

In the situations where the Project's *degree of visual change* would be positive, that change was classified as a low *degree of visual change*, with a note that it was a positive visual change (only adverse changes are assigned to moderate and high *degrees of visual change*)

- **Level of Visual Sensitivity.** The *level of visual sensitivity* of each view was also classified based on the following factors:
 - The number and types of people who see the view.
 - The length of time the view is observed. This factor was based on residents and recreational users having views of long duration, whereas motorists often experience views in short durations.
 - Potential levels of viewer concern about the visual character and quality of the view. Level of concern is a subjective response that includes factors such as the visual character of the surrounding landscape, the activity a viewer is engaged in, and the viewer's values, expectations, and interests. This factor was based on residents and recreational users being more sensitive viewers and with commuters and employees in industrial areas being less sensitive viewers.

For situations where there are few viewers who experience a defined view, or when they may not be concerned with the view, a low level of sensitivity classification was applied. Situations in which there are many viewers who have high frequency or long duration views, as well as viewers who are likely to be very aware of and concerned with the view, such as viewers on trails, in recreational areas, or in residential neighborhoods, were classified as having a high level of sensitivity. Situations in between these two sets of conditions were classified as having a moderate level of sensitivity.

- **Level of Visual Impact.** The final determination of the Project's *level of visual impact* on the visual environment entailed taking both the *degree of visual change* and the *degree of visual sensitivity* of the view into account. The levels of visual impact are described as low, moderate, and substantial, as defined below:
 - **Low.** The Project will have a low *level of visual impact* where it will result in a slight change in visual character or quality, with no substantive effect on a visually sensitive area. New visual elements would be generally compatible with existing visual character, and little to no viewer response to visual changes is expected. A low level of visual impact usually results from low degree of visual change to views that have low to high degrees of visual sensitivity. Situations in which the Project would have a positive impact on visual quality were also classified as having a "low" degree of visual impact.
 - **Moderate.** The Project will have either (1) a slight change in visual character or quality, resulting in a high level of viewer response, or (2) an extensive change in visual character or quality with only a minimal viewer response. New visual elements would be somewhat compatible with existing visual character and quality. A moderate level of visual impact results where there will be a moderate degree of visual change in areas that have a low to high degree of visual sensitivity, or where there will be a high degree of visual change in areas with a moderate degree of visual sensitivity.
 - **Substantial.** The Project will have a substantial level of impact where there will be an extensive change to visual character or quality, or substantial effect on a visually sensitive area. New visual elements would be generally incompatible with existing visual character and quality, resulting in a high level of viewer response. A high degree visual impact results where there will be a high degree of visual change in areas with a high degree of visual sensitivity.

3.7.2 Affected Environment

This section describes the visual quality within the VAU, and takes into account visual resources along the proposed light rail alignment. Generally, working southwest to northeast along the proposed light rail alignment, this section defines the Project's six VAU: (1) Eden Prairie, (2) North Eden Prairie/Minnetonka/South Hopkins, (3) Hopkins, (4) St. Louis Park, (5) Kenilworth Corridor, and (6) Minneapolis Downtown Fringe; identifies the viewer groups for the 19 viewpoints selected for

assessment; and documents the visual quality. Additional detail on the VAUs and viewpoints can be found in Appendix J.

3.7.2.1 Eden Prairie

The visual environment in the Eden Prairie VAU is characterized by suburban development. Prominent features include wide roadways, mid- to low-rise office building campuses, multifamily residential buildings, commercial buildings, water retention ponds, and Purgatory Creek Park. Many of the commercial developments and office parks in this VAU have landscaping, including lawns and trees. Gently rolling hills toward the north of the segment provide topographical relief. Individual areas of development in the VAU have architectural treatments on their façades and other specific design elements, but there are no consistent visual or design elements that link the developments together.

Four viewpoints have been identified within the Eden Prairie VAU and represent areas where changes to the visual environment occur because of the Project. The locations of these viewpoints are indicated on Exhibit J-1. Photographs depicting the existing conditions seen from the viewpoints, as well as simulations that depict the views as they would appear with the Project in place, are presented in Appendix J, Attachment J-1. The ratings of the visual quality of each of these views indicated in the following viewpoints were determined through the FHWA visual quality evaluation analysis documented in Table J-1 in Appendix J.

- **Viewpoint 1** is looking east from Technology Drive toward the SouthWest Transit Center (Exhibit J-2). Existing visual quality level: Medium.
- **Viewpoint 2** is looking south along Prairie Center Drive at Technology Drive. Purgatory Creek Park is visible in the foreground of the view, on the far side of Technology Drive (Exhibit J-3). Existing visual quality level: Moderately Low.
- **Viewpoint 3** is from the parking area in front of the picnic pavilion in Purgatory Creek Park, looking east toward Prairie Center Drive (Exhibit J-4). Existing visual quality level: Medium.
- **Viewpoint 4** is from Eden Road toward the undeveloped area just north of the Town Center Market Place (Exhibit J-5). Existing visual quality level: Medium.

Viewer groups in the Eden Prairie VAU include park users, drivers, pedestrians, workers, shoppers, and cyclists on the existing street network. Residential and park users are more sensitive to change than the other viewer groups; this is particularly true for any visual changes that might affect their enjoyment of Purgatory Creek Park.

3.7.2.2 North Eden Prairie/Minnetonka/South Hopkins

This VAU has a heavily developed suburban character. The proposed light rail alignment in this area will be located in a new right-of-way that will, along part of its route, parallel limited access highways (Highways 212 and 62). Along most of the rest of its route in this VAU, the light rail alignment will thread through areas developed with a mix of low-rise suburban office, commercial, warehouse, and industrial facilities. In Minnetonka and Hopkins, near Smetana Road the proposed light rail alignment will pass along the edges of two multifamily residential complexes.

Two viewpoints represent areas where changes to the visual environment occur as a result of the Project. The locations of these viewpoints are indicated on Exhibit J-6 in Appendix J. Photographs depicting the existing condition views from these locations, as well as simulations that depict the views as they would appear with the Project in place are presented in Appendix J, Attachment J-1. Table J-2 in Appendix J documents the visual quality ratings for each of these views, which are indicated in the following list:

- **Viewpoint 5** is from Flying Cloud Drive looking northeast toward Nine Mile Creek (Exhibit J-7). Existing visual quality level: Medium.
- **Viewpoint 6** is from the trail on the west side of the Claremont Apartments looking southeast along the proposed LRT right-of-way (Exhibit J-8). Existing visual quality level: Medium.

Viewer groups in the Eden Prairie/Minnetonka/South Hopkins VAU include drivers on local roads and Highways 212 and 62, pedestrians along local streets and on trails, workers employed at the commercial, warehouse, and industrial facilities in the area and residents in the two large apartment complexes at the area's northern end. Most viewers in the area are motorists and are less sensitive to visual change. Residents and trail users experience a higher degree of sensitivity to visual change than motorists.

3.7.2.3 Hopkins

In this VAU, the proposed light rail alignment is located in a rail corridor that contains a freight rail line and trails, and is currently owned by Canadian Pacific Railway and HCRRA, respectively. The trail segment in this VAU is part of the Cedar Lake LRT Regional Trail east of the Shady Oak Station and the Minnesota River Bluffs LRT Regional Trail to the west of Shady Oak Station. Land uses adjacent to the corridor in this area are primarily industrial, retail/commercial, and office, with some multifamily and single-family residential land uses. The visual setting is a built environment with industrial and utility uses typical in a freight corridor.

Various levels of vegetation buffers predominantly screens the views to and from surrounding land uses in this VAU.

Two viewpoints represent areas where changes to the visual environment occur as a result of the Project. The locations of these viewpoints are indicated on Exhibit J-10. Photographs depicting the existing conditions seen in the views from these locations, as well as simulations that depict the views as they would appear with the project in place are presented in Attachment J-1. Table J-3 in Appendix J documents the ratings of the visual quality of each of these views, which are indicated in the following list:

- **Viewpoint 7** is the view from the Minnesota River Bluffs LRT Regional Trail looking east toward the site of the proposed Shady Oak Station (Exhibit J-10). Existing visual quality level: Medium.
- **Viewpoint 8** is the view from the area south of Excelsior Boulevard looking east toward The Depot, which is a converted 1903 train station, coffee house, and gathering place for users of the adjacent bike trail (Exhibit J-11). Existing visual quality level: Moderately Low.

Viewer groups in the Hopkins VAU include pedestrians and bicyclists using the Cedar Lake LRT Regional Trails, people working in the industrial areas along the HCRRA/Canadian Pacific Railway-owned corridor, motorists on Excelsior Boulevard, and residents of the area to the southeast of the point where the rail corridor crosses Excelsior Boulevard. Motorists and workers within the industrial areas of this VAU will generally be less sensitive to visual changes caused by the Project, while residents and trail users will be more sensitive.

3.7.2.4 St. Louis Park

In this VAU, the proposed light rail alignment will be located adjacent to the HCRRA rail corridor that contains a freight rail line, and Cedar Lake LRT Regional Trail. Land uses adjacent to the corridor in this area consist of a mix of industrial, retail/commercial, office, and single- and multifamily housing. Much of the visual setting is a built environment with industrial and utility uses typical in a freight corridor.

Four viewpoints represent areas where changes to the visual environment occur as a result of the Project. The locations of these viewpoints are indicated on Exhibit J-12. Photographs depicting the existing conditions viewed from these locations, as well as simulations that depict with-project conditions are presented in Appendix J, Attachment J-1. Table J-4 in Appendix J documents the ratings of the visual quality of each of these views, which are indicated in the following list:

- **Viewpoint 9** is the view from the Cedar Lake LRT Regional Trail, looking east toward the site of the Louisiana Station (Exhibit J-13). Existing visual quality level: Medium.
- **Viewpoint 10** is the view from 36th Street at Brunswick Avenue looking west toward Jorvig Park, (Exhibit J-14). Existing visual quality level: Moderately Low.
- **Viewpoint 11** is the view from Beltline Boulevard at Minnesota Highway 7, looking south southeast toward the site of the Beltline Station (Exhibit J-15). Existing visual quality level: Moderately Low.

- **Viewpoint 12** is the view from the Cedar Lake LRT Regional Trail near France Avenue, looking west (Exhibit J-16). Existing visual quality level: Medium.

Pedestrians and bicyclists using the Cedar Lake LRT Regional Trail, which parallels the proposed LRT alignment, and users of several parks and neighborhoods of single-family residences and multifamily complexes that lie adjacent to the freight rail and trail corridor in this area will be highly sensitive to visual changes brought about by the Project. Motorists using the roadway that cross the freight rail and trail corridor and viewers in the several industrial areas located along this segment will be less sensitive.

3.7.2.5 Minneapolis Kenilworth Corridor

In this VAU, the light rail alignment will be located in a corridor currently owned by HCRRA, and contains a freight line and a trail. The Cedar Lake LRT Regional Trail and Kenilworth Trail parallel this freight line in this area. Although the westernmost end of this corridor passes through an area characterized by multifamily housing complexes and shopping centers, most of the corridor is bordered by neighborhoods of single- and multifamily homes and parklands. The freight rail and trail corridor are predominantly fringed by overstory and understory deciduous vegetation, which, in the summer, screens views into the corridor. During the leaf-off season, the degree to which the vegetation screens views from the surrounding area into the corridor is reduced. Some areas of clearing at several locations along the right-of-way open up the bicycle and pedestrian trail to views to and from the surrounding urban environment. For example, at locations where the trail crosses roads, cleared areas are adjacent to residential developments, and cleared areas exist at the open, maintained trail corridor north of Burnham Road. Within the corridor, views from the trail include the trail itself, the freight rail line, the freight trains of varying length that travel in the corridor, and the thick bands of bordering vegetation. The views from the trail also include occasional views of adjacent residential development and the distant Minneapolis skyline in the background. One of the areas of visual interest along this segment is the location where the Kenilworth Corridor crosses the Kenilworth Channel, providing a connection between Cedar Lake and Lake of the Isles. Views from the trail toward the channel are limited because of the thick vegetation that surrounds the trail (Exhibit J-20). For users of the channel (e.g., boaters and cross-country skiers), the wood-pile trestle bridge that carries the trail and the freight rail line across the channel is a visually distinctive and a dominant element of the view.

Six viewpoints provide representative views along the corridor where the Project has the potential to change the visual environment. The locations of these viewpoints are indicated on Exhibit J-17. Photographs depicting the existing conditions seen in the views from these locations, as well as simulations that depict with-project conditions are presented in Appendix J, Attachment J-1. Table J-5 in Appendix J documents the ratings of the visual quality of each of these views, which are indicated in the following list:

- **Viewpoint 13** (Exhibit J-18) is on Chowen Avenue South and provides a view looking northeast toward the Kenilworth Corridor. In this view, a walker is visible on the Cedar Lake LRT Regional Trail. The freight line is screened by intervening vegetation. Existing visual quality level: Medium.
- **Viewpoint 14** (Exhibit J-19) is on the Kenilworth Trail at a point just north of West Lake Street. The view looks north along the bike and pedestrian trails. The freight rail line is located behind the intervening vegetation that borders the left side of the trail. Existing visual quality level: Medium.
- **Viewpoint 15** (Exhibit J-20) is on the Kenilworth Trail at the southern edge of the crossing over the channel that connects Cedar Lake with Lake of the Isles. The view looks north along the combined bike and pedestrian trail. The freight rail line is visible to the left of the trail. The railing of the bridge over the channel is visible along the left and right sides of the trail. Existing visual quality level: Moderately High.
- **Viewpoint 16** (Exhibit J-21) is from the channel that connects Cedar Lake with Lake of the Isles via the Kenilworth Lagoon. The view was taken from the channel at a point east of where the freight rail line and parallel bike and pedestrian trail cross the channel. Existing visual quality level: Moderately High.
- **Viewpoint 17** (Exhibit J-22) is from the Burnham Road Bridge over the channel that connects Cedar Lake with Lake of the Isles via the Kenilworth Lagoon. The view looks southeast down the channel toward the existing freight rail bridge. Existing visual quality level: Moderately High.

- **Viewpoint 18** (Exhibit J-23) is from West 21st Street at Thomas Avenue South. The view looks northwest toward Kenilworth Corridor. Although the corridor is mostly hidden behind the thick tree cover, the freight rail line and Kenilworth Trail are glimpsed at the point at which they cross West 21st Street. Existing visual quality level: Medium.

The sensitive viewer groups present in the Kenilworth Corridor VAU include adjacent residents and recreational users of the trail and the channel connecting the lakes. Those viewer groups have a high level of visual sensitivity.

3.7.2.6 Minneapolis Downtown Fringe

Land uses in this VAU consist of a mixture of rail lines, roadways, industrial uses, and, to the north of the corridor, Bryn Mawr Meadows Park. At Glenwood Avenue, the route will leave the below grade rail corridor and travel north along Royalston Avenue and then curve east through an industrial area to arrive at Target Field Station.

One viewpoint has been selected to represent areas where changes to the visual environment could potentially occur because of the Project. This viewpoint (Viewpoint 19) is located on Royalston Avenue at Holden Street North, and provides a view looking north along Royalston Avenue toward the proposed site of the Royalston Station. The location of this viewpoint is indicated on Exhibit J-24. Images documenting the existing view and the simulated with-project view are provided on Exhibit J-25. Table J-6 in Appendix J documents the rating of the visual quality of this view, which is indicated as follows:

- **Viewpoint 19** is from Royalston Avenue North and Holden Street North, looking north toward the proposed Royalston Station location (Exhibit J-25). Existing visual quality level: Moderately Low.

People hiking and biking on the Cedar Lake LRT Regional Trail will be most sensitive to the visual changes brought about by the Project, while those traveling and working in the industrial area between Royalston Avenue North and the Target Field Station will be less sensitive.

3.7.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect visual quality and aesthetics impacts from the Project (see Section 2.1.1.2 for a description of construction activities).

3.7.3.1 Long-term Direct Visual Quality and Aesthetic Impacts

The Project would result in changes to the visual environment from the introduction of new visual elements, or the removal or replacement of existing elements. In all VAUs, the transitway would add the linear elements of the tracks and overhead wire system, which includes the poles supporting the wires. These new visual elements cannot be avoided, and in most locations, these elements would not be anticipated to result in an adverse effect. The tracks in or adjacent to a roadway would not be a high visual impact in an area of low or moderate sensitivity for viewers. Stations and power substations would also be new visual elements in the corridor. The at-grade stations have been designed to have a minimal impact on the surrounding environs. Each of the stations has been designed to be compatible or attractive additions to the surrounding community. In areas of moderate or high visual sensitivity, the power substations would be screened or landscaped to be compatible with the surrounding neighborhood character.

The Project has the potential to cause light spill and glare effects at certain points along the alignment. To minimize the Project's lighting contribution to sky-glow and glare, Project lighting fixtures (e.g., LRV, stations) will have designs to prevent light from shining directly into the sky. The full-shielding designs, which provide directional control to the lighting fixtures and which will also ensure that the light source will not be visible in the horizontal direction, will minimize the potential for the lighting to create sky-glow and glare effects. Preventing the horizontal radiation of light from the fixtures will also eliminate light spill and the potential for Project lighting to affect ambient lighting levels in the surrounding area. A further consideration is that light energy or illumination decreases at a rate equal to the square of the distance. Therefore, even if the fixtures permitted horizontal radiation of light, the potential for it to create light trespass and changes in ambient lighting conditions would be limited to areas that are very close to the light sources. This has the potential to change the nighttime character of these areas, and this change could have

adverse effects for the residences along the streets where the light trespass will occur. However, the impacts on these areas will be attenuated by use of lighting fixtures with full shielding that direct the light only to the areas where it is required and which prevent light spill and glare effects at nearby residences. Additionally, the headlights on the fronts of LRT vehicles have highly focused beams that direct the light downward onto the track straight ahead and do not project light out into the surrounding environment.

There are, however, visually sensitive areas and other features that characterize the corridor's visual environment that may be affected by the Project. The effects of the Project on each of the 19 viewpoints used for analysis are summarized in Table 3.7-1. This table is followed by a brief review of the visual changes in each of the VAUs and the impacts to each of the viewpoints analyzed. This review of the impacts by VAU and viewpoint is followed by a set of measures to mitigate the visual impacts identified.

TABLE 3.7-1

Summary of Visual Quality and Aesthetics Impacts

VAU	Viewpoint	Ratings		
		Degree of Visual Change	Level of Visual Sensitivity	Level of Impact
Eden Prairie	Viewpoint 1 View Looking East from Technology Drive Toward the SouthWest Transit Center	Low	High	Low
	Viewpoint 2 View Looking South along Prairie Center Drive at Technology Drive Toward Purgatory Creek Park	High	Moderate	Moderate
	Viewpoint 3 View from the Parking Area in Front of the Picnic Pavilion in Purgatory Creek Park	Moderate	High	Moderate
	Viewpoint 4 Eden Road at Glen Road, Looking West	Moderate	High	Moderate
North Eden Prairie/Minnetonka/South Hopkins	Viewpoint 5 Flying Cloud Drive Looking Northeast Toward Nine Mile Creek ^b	High	Moderate	Moderate
	Viewpoint 6 Trail on the West Side of the Claremont Apartments, View Looking Southeast	High	High	Substantial
Hopkins	Viewpoint 7 Minnesota Bluffs LRT Regional Trail Looking East Toward Proposed Site of the Shady Oak Station	High	High	Substantial
	Viewpoint 8 View from the area south of Excelsior Boulevard Looking East Toward The Depot	Low ^a	Moderate to High	Low
St. Louis Park	Viewpoint 9 Cedar Lake LRT Regional Trail, View Looking East Toward Site of the Proposed Louisiana Station	High	High	Substantial
	Viewpoint 10 View From 36th Street at Brunswick Avenue, Looking West Toward Jorvig Park	Moderate	Moderate to High	Moderate
	Viewpoint 11 Beltline Boulevard at Minnesota Highway 7, Looking South-Southeast Toward the Site of the Beltline Station	Low ^a	Moderate	Low

VAU	Viewpoint	Ratings		
		Degree of Visual Change	Level of Visual Sensitivity	Level of Impact
	Viewpoint 12 Cedar Lake LRT Regional Trail, View Looking West	High	High	Substantial
Kenilworth Corridor	Viewpoint 13 View from Chowen Avenue South Southwest of the West Lake Station	Low	High	Low
	Viewpoint 14 Kenilworth Trail North of West Lake Street, Looking North toward the Site of the South Tunnel Portal	High	High	Substantial
	Viewpoint 15 Kenilworth Trail at Southern Edge of the Kenilworth Lagoon Crossing	Moderate	High	Moderate
	Viewpoint 16 View from the Channel Between Cedar Lake and Lake of the Isles, View from the East toward the Kenilworth Corridor Bridges	Low	High	Low
	Viewpoint 17 View from the Burnham Road Bridge Looking Southeast down the Channel toward the Kenilworth Corridor Bridges	High	High	Substantial
	Viewpoint 18 View Toward the Kenilworth Corridor Crossing of West 21st Street	Low ^a	High	Low
Minneapolis Downtown Fringe	Viewpoint 19 Royalston Avenue North at Holden Street, Looking North Toward the Site of the Proposed Royalston Station	Low ^a	Low to Moderate	Low

^a The degree of visual change for these four viewpoints (Viewpoints 8, 11, 18, and 19) would result in a positive change, as described in Section 3.7.1.

^b The project includes both a partial property acquisition and temporary construction easement with the Nine Mile Creek Conservation Area. The conservation area also includes an easement for scenic preservation purposes over and above land. The partial acquisition associated with the project and within the Nine Mile Creek Conservation Area will require a permanent boundary adjustment to the limits of this conservation area, including the limits of the easement for scenic preservation purposes.

Eden Prairie

This summary of the impacts in this VAU is supported by Exhibits J-2 through J-5, which present existing conditions photographs from each of the viewpoints selected, and simulations that depict the with-project conditions. Table J-7 in Appendix J evaluates the anticipated visual changes that will occur in the views from each of the viewpoints. The brief narratives that follow summarize the visual changes and the nature and degree of visual impact on each of the views.

Viewpoint 1 – View Looking East from Technology Drive Toward the SouthWest Transit Center (Exhibit J-2)

Level of Impact: Low

A structured park-and-ride lot will extend out from the western side of the SouthWest Station. The area between this structured parking facility and Technology Drive will be converted into access drives and landscaped areas. Based on these Project features the view will appear more intensively developed. The view's level of vividness will decrease slightly from the removal of landscaping in front of the station and the removal of the bus station's curved roof, which currently provides a measure of visual interest. The intactness of this view will be reduced slightly by the removal of some of the landscaping currently visible in front of the Transit Center and by the additional structural mass added by the expansion of the parking

structure. The level of visual unity will remain about the same. Although the LRT facilities would add more built elements to the view, their forms and arrangement would be consistent with the view's other built features.

The change in the level of visual quality of this view will be low. Given the use of the trail along the southern side of Technology Drive, and the presence of residential viewers in the apartment buildings on the northern side of Technology Drive, the viewers in this area include those with high levels of sensitivity. The combination of a low degree of visual change and a high level of visual sensitivity results in a level of impact that is low.

Viewpoint 2 – View Looking South Along Prairie Center Drive at Technology Drive Toward Purgatory Creek Park (Exhibit J-3)

Level of Impact: Moderate

A concrete elevated light rail guideway will be built along the western edge of the roadway, adding a visually prominent structure to the setting that will split this view. With the addition of the overhead structure, the visual character will be changed by the enclosed view and the increased level of development. The level of vividness, which is currently moderately low, will remain the same. The intactness will be substantially reduced by addition of the large, visually dominant LRT structure in the immediate foreground. The level of visual unity will decrease because the elevated LRT structure will split the view.

The change to the level of visual quality will be high. Given the high degree of change to the visual quality of this view and the moderate sensitivity of the roadway users in this area, the overall level of impact is moderate.

Viewpoint 3 – View From the Parking Area in Front of the Picnic Pavilion in Purgatory Creek Park, Looking East Toward Prairie Center Drive (Exhibit J-4)

Level of Impact: Moderate

Under the Project, an elevated concrete light rail guideway will be built along the eastern boundary of the park, adding a visually dominant linear element to the setting, which will frame the park's eastern edge. Landscape trees between the park's primary use areas and the elevated structure will both partially reduce the structure's visibility and integrate it into the view. The overhead structure will intrude on the view and contrast with the visual character of the other elements in it. Consequently, there will be a reduction in the view's levels of intactness and unity. The reduction in visual quality will be moderate. This view, based on the recreational viewers in the park, is highly sensitive. The moderate degree of visual change, combined with the high level of visual sensitivity will result in a moderate level of impact.

Viewpoint 4 – Eden Road at Glen Lane Looking West (Exhibit J-5)

Level of Impact: Moderate

The light rail alignment will be located along the northern edge of Eden Road. This will require removing the trees along Eden Road that now screen the views into the Market Place Shopping Center and installing at-grade tracks, OCS, and perimeter fences. In addition, Eden Road will be modified, including a new access road into Eden Prairie Town Center Station at the top of the hill to the right of the water tower. The station's features will not be visible in this view. With these changes, the view's level of vividness will remain essentially the same. The intactness will be reduced by removing the trees that now line the northern and southern edges of Eden Road, by building the visually intrusive tracks and OCS, and by revealing the shopping center structures that are now hidden. The level of visual unity will remain about the same because the LRT facilities will create linear features that will parallel Eden Road and lead the eye toward the water tower, which is the focal point of the view. The degree of change in visual quality will be moderate. The viewers in this area include motorists on Eden Road and employees and customers of the commercial land uses. Because of the pedestrian amenities the City of Eden Prairie has been installing in this area, the viewers also include substantial numbers of pedestrians. Because of their presence, the visual sensitivity of the viewers in this area is high. When the moderate degree of visual change is considered in the context of the high sensitivity of the viewers, the level of visual impact is moderate.

North Eden Prairie/Minnetonka/South Hopkins

This summary of the impacts in this VAU is supported by Exhibits J-7 through J-8, which present existing conditions photographs from each of the viewpoints selected, and simulations that depict the Project conditions. Table J-8 in Appendix J evaluates the anticipated visual changes that will occur in the views from each of the viewpoints. The brief narratives that follow summarize the visual changes and the nature and degree of visual impact on each of the views.

Viewpoint 5 – Flying Cloud Drive, View Looking Northeast Toward Nine Mile Creek (Exhibit J-7)**Level of Impact: Moderate**

In the area encompassed in this view, the light rail alignment will travel on an overhead structure that will parallel the western side of Flying Cloud Drive, pass over it, and then travel into the wooded area on the eastern side of the road. The predominant visual resources in this area include a bucolic natural setting surrounding the immediate area with mature trees. Tree clearing will be required to accommodate the right-of-way. The presence of the elevated light rail alignment structure will have a mixed effect on the vividness of this view. The intactness will be reduced by the addition of the visually dominant elevated light rail structure and OCS and the creation of a cleared corridor through the wooded area on the eastern side of the road. The addition of the visually dominant light rail alignment overhead structure will change the visual composition. The light rail structure will add a new element that extends across the entire view, while reducing the visual unity of the current view of the landscape. Consequently, the visual unity of the current view will be altered substantially. Although the immediate context of this view appears to be an undeveloped, forested area, the reality is that this area part of a district of Eden Prairie that is primarily devoted to large office parks. Thus, the overall visual character of this district is that of a highly developed suburban office park landscape. Given the utilitarian function of this district, the visual sensitivity of motorists and pedestrians in the area along Flying Cloud Drive is moderate. When the high degree of visual change is considered in the context of the moderate sensitivity of the viewers in the area, the level of visual impact will be moderate.

Viewpoint 6 – Trail on the West Side of the Claremont Apartments, View Looking Southeast (Exhibit J-8)**Level of Impact: Substantial**

In the area seen in this view, development of the light rail alignment will require removing existing trees that currently cover a slope bordering the western side of the trail near a small building to the east of the trail. A 9-foot to 20-foot concrete retaining wall will be built to create a relatively flat, elevated right-of-way for the light rail tracks and a noise wall will be added to address noise impacts. Removal of the thick tree cover that lines the trail will remove an important element that contributes to the existing level of vividness of this view. The retaining and noise walls, which will extend up to approximately 28 feet in height, and which will be located immediately adjacent to the trail, will intrude on this view, reducing its level of visual intactness. Disruption of the continuous band of trees along the trail will reduce the view's level of visual unity. The impact of these changes will be a substantial decrease in the level of visual quality. This view is seen by residents of the apartment complex to the east, and by those using the trail that lies at the base of the slope on which the light rail alignment will be located. Given the high sensitivity of the viewers in this area, the high degree of impact on visual quality will result in a level of impact that is substantial.

Hopkins

This summary of the impacts in this VAU is supported by Exhibits J-10 through J-11, which present existing conditions photographs from each of the viewpoints selected and simulations that depict the Project conditions. Table J-9 in Appendix J evaluates the anticipated visual changes that will occur in the views from each of the viewpoints. The brief narratives that follow summarize the visual changes and the nature and degree of visual impact on each of the views.

Viewpoint 7 – Minnesota River Bluffs LRT Regional Trail Looking East Toward the Proposed Site of the Shady Oak Station (Exhibit J-10)**Level of Impact: Substantial**

The vegetation that lines the trail will be removed, opening up a view toward the extension of 17th Avenue, the LRT tracks and OCS, and the proposed Shady Oak Station. In addition, the removal of the trees along the trail will open up the view toward the one-story industrial and warehouse buildings located in the area to the east of the 17th Avenue extension. The removal of the trees that frame the trail will substantially reduce the vividness of the view. The visual intactness of the view will be substantially reduced by the visibility of a large collection of built features. The disparate elements that will become visible in this view will create a composition with a low degree of visual cohesion. The overall degree of visual change will be high. Given the high level of visual sensitivity of the users of the Minnesota River Bluffs LRT Regional Trail and the high degree of visual change, the overall level of visual impact will be substantial.

Viewpoint 8 – View From the Area South of Excelsior Boulevard Looking East Toward The Depot (Exhibit J-11)**Level of Impact: Low**

The addition of the light rail tracks and OCS adjacent to the existing freight rail line will entail removal of the trees and wooden utility poles that now line the corridor. An elevated segment of the light rail tracks will be visible at the left side of the view. Because the visual changes associated with construction of the light rail alignment into this view are relatively slight, the vividness of this view will not change. The visual intactness will be slightly improved by removal of the wooden utility poles that currently line the freight rail corridor, which will have the effect of reducing the visual clutter. Removal of the wooden utility poles with their complex forms will lead to a slight improvement of the visual unity of this view. The viewers in this area include the patrons of The Depot coffee shop, who have a moderate level of visual sensitivity, and walkers and bicyclists using the Cedar Lake LRT Regional Trail, who have a high level of sensitivity to visual change. Because the degree of visual change will be low, the level of visual impact will also be low.

St. Louis Park

This summary of the impacts in this VAU is supported by Exhibits J-13 through J-16, which present existing conditions photographs from each of the viewpoints selected, and simulations that depict the Project conditions. Table J-10 in Appendix J evaluates the anticipated visual changes that will occur in the views from each of the viewpoints. The brief narratives that follow summarize the visual changes and the nature and degree of visual impact on each of the views.

Viewpoint 9 – Cedar Lake LRT Regional Trail, View Looking East toward the Site of the Proposed Louisiana Station (Exhibit J-13)**Level of Impact: Substantial**

This view will be substantially altered with shifting of the trail to the north, and shifting of the freight rail tracks into the center of the corridor between the existing trail and existing freight rail tracks. The trees that currently line the south side of the trail corridor will be cleared, opening up the view of a utility transmission line and elevated rail line to the east and to the proposed Louisiana Station that will be at a lower elevation to the south. The view will become more open, and built elements will play a larger role in the view. Because of these changes, the level of vividness will decrease. Removal of the trees will also reduce the level of intactness. The substantial alteration of this view will result in a view that is more complex with a moderately low degree of visual order. The change in the level of visual quality will be moderate. This view is seen by users of the Cedar Lake LRT Regional Trail, who have a high level of sensitivity to visual change. When the high degree of change to visual quality is considered in the context of the high level of visual sensitivity of this view, the level of impact is substantial.

Viewpoint 10 – View From 36th Street at Brunswick Avenue, Looking West toward Jorvig Park (Exhibit J-14)**Level of Impact: Moderate**

In this view, the Project-related visual changes will include removal of trees along the edge of the rail right-of-way bordering Jorvig Park and addition of at-grade LRT tracks, OCS, a pedestrian trail, noise walls, and a small switching station equipment box. Although some of the trees along the southern edge of the rail corridor that currently contribute to the vividness of this view will be removed, the overall level of vividness will remain the same because the removal of the trees and the addition of the trail add a new dimension of vividness by opening up the view and creating a feature that will lead the eye into the distance along the rail corridor. The addition of the OCS and noise walls and the removal of some of the tree cover that now screens the bridge structure and transmission tower in the background will lead to a moderate decrease in the intactness of this view. The addition of the linear LRT facilities, trail, noise walls, and equipment box to this view will introduce elements that will contrast with the prevailing landscape pattern, creating a moderate decrease in the existing level of visual unity. The combined effect of these factors on the overall level of visual quality will be moderate. There will be no effects on views from the park or from the historic station because of the thick band of trees that lies between the park and the freight rail corridor. The visual sensitivity of views in this area ranges from moderate for travelers on 36th Street to high for users of Jorvig Park. Given the moderate to high sensitivity of the views and the moderate degree of change to the visual quality, the overall level of visual impact will be moderate.

Viewpoint 11 – Beltline Boulevard at Minnesota Highway 7, Looking South-Southeast Toward the Site of the Beltline Station (Exhibit J-15)**Level of Impact: Low**

The Project will require removal of the commercial structure and trees currently located on the east side of Beltline Boulevard and north of the freight rail track and trail. This area will be converted to a landscaped parking lot, which will have an open appearance. The most prominently visible project feature will be the pedestrian bridge that will parallel the north side of the LRT corridor and extend across the view. The Beltline Station will be visible behind the pedestrian bridge structure. The addition of the pedestrian bridge, particularly the section over Beltline Boulevard that is bordered by steel trusses, will add a human-made element that will somewhat increase the vividness of the view. The Project will remove the commercial building on the east side of the boulevard and add features including the landscaping in the parking area, the pedestrian bridge, and the station that are well designed and contribute to enhanced visual intactness of the view. The Project will greatly improve the visual intactness of the view by removing the visually discordant commercial structure and adding the pedestrian bridge and station structures that will create strong horizontal forms across the view and help to tie the visually disparate element of the existing view together. The impact on the level of visual quality will be low, and the impact on the viewers on Beltline Boulevard, whose level of visual sensitivity is moderate, will be low as well.

Viewpoint 12 – Cedar Lake LRT Regional Trail, View Looking West (Exhibit J-16)**Level of Impact: Substantial**

The Project will require shifting the trail farther to the south and removing the existing tree cover located in the area between the existing trail and the freight rail tracks. The view in the area along the north side of the trail will be completely open, providing a close-up view of the light rail tracks and OCS. In addition, the apartment buildings on the north side of the corridor will become more visible. The removal of the line of trees along the trail will eliminate one of the elements important in establishing the current level of vividness. The addition of the close-up views of the light rail tracks and OCS and the increased visibility of the freight rail tracks and nearby multifamily housing will substantially reduce the level of visual intactness. Although there will be a substantial change in the composition of this view, because the major elements of the view will align with each other, they will create a visual composition with a moderate level of visual unity. The change in the degree of visual quality will be high. The users of the Cedar Lake LRT Regional Trail

will have a high level of sensitivity to visual change. When the high degree of change to visual quality is considered in the context of the high level of visual sensitivity, the level of impact will be substantial.

Kenilworth Corridor

This summary of the impacts in this VAU is supported by Exhibits J-18 through J-23, which present existing conditions photographs from each of the viewpoints selected, and simulations that depict the Project conditions. Table J-11 in Appendix J evaluates the anticipated visual changes that will occur in the views from each of the viewpoints. The brief narratives that follow summarize the visual changes and the nature and degree of visual impact on each of the views.

Viewpoint 13 – View from Chowen Avenue South Southwest of the West Lake Station (Exhibit J-18)

Level of Impact: Low

Clearance of trees and other vegetation along the left side of the street will open up the views into the rail/trail/transit corridor. The corridor will have a more developed appearance, with the addition of the light rail alignment, its OCS, and perimeter fences; the addition of the West Lake Station, its waiting platform, OCS, fencing, and surrounding paved circulation area will also contribute to a more developed appearance. The existing pedestrian and bike trails will be shifted closer to the street and will be more visible, especially where the existing street profile will be raised. However, the visual impacts of the Project will be low. The removal of the existing trees along Chowen Avenue South will make the view more expansive, and the West Lake Station will provide a visual focal point, making the view more interesting and memorable. The linear features in the rail/trail/transit corridor will be consistent with each other and with the lines of the street, contributing to the creation of a visually unified composition. This view has a high visual sensitivity because it is seen by the residents of the high-density buildings along Chowen Avenue South and Abbott Avenue. While the Project's visual impacts, described above, will be low, careful design of the Project, consistent with the Visual Quality Guide (Metro Transit, 2015), in this area will still be required based on this high level of visual sensitivity.

Viewpoint 14 – Kenilworth Trail North of West Lake Street, Looking North toward the Site of the South Tunnel Portal (Exhibit J-19)

Level of Impact: Substantial

The rail freight line will be shifted further to the west requiring removal of trees that will partially open up views to apartment buildings that also border the west side of the corridor. The transition of the light tracks from at-grade down into the south tunnel portal will require a trench in the middle of the corridor. The corridor's retaining walls and fencing will dominate views from the trail. Widening the corridor to accommodate the light rail alignment will also require removal of existing trees located along the corridor's eastern edge. Removal of these trees will open up views toward the tall apartment buildings that border the corridor to the east.

Vividness of this view will be reduced, particularly through the removal of existing vegetation that now characterizes this segment of the corridor. The intactness of this view will be reduced by decreases in the tree canopy, which will expose the apartment buildings located adjacent to the corridor, and by addition of a below-grade LRT track defined by retaining walls, fencing, and OCS. The visual unity of the view will be reduced by introduction of the highly contrasting features of the trenched section of the light rail alignment and the exposure of the vertical and bulky forms of the apartment structures that will intrude on the views from the corridor. The level of visual change will be high. This high degree of change, combined with the high level of visual sensitivity of the trail users, will result in a substantial level of impact.

Viewpoint 15 – Kenilworth Trail at the Southern Edge of the Kenilworth Lagoon Crossing (Exhibit J-20)

Level of Impact: Moderate

The existing vegetation that is immediately adjacent to the trail in this area will be removed. The vegetation removal is necessary to accommodate the above ground segment of the light rail alignment as it approaches

the lagoon crossing. The freight rail track will also be shifted to the north. Fencing will be installed on both sides of the bike/pedestrian trail corridor. Reduction in the tree masses, immediately adjacent to the trail and elimination of the existing split rail fencing along the trail will reduce the vividness of the view. There will be a slight reduction in visual intactness and a limited reduction in visual unity. The reduction in the visual quality of this view will be moderate, but the level of visual sensitivity is high. Therefore, the level of visual impact will be moderate.

Viewpoint 16 – View from the Channel Between Cedar Lake and Lake of the Isles, View from the East toward the Kenilworth Corridor Bridges (Exhibit J-21)

Level of Impact: Low

The Project will require demolition of the existing wood trestle bridge that carries the existing freight rail line and the trail across the channel and construction of three new concrete bridges for freight rail, LRT and the trail. The easternmost and most visible of these bridges will be a single arch bridge for the pedestrian and bike trail. The other two bridges will be hidden behind the pedestrian bridge, except for the concrete supporting piers located in the middle of the channel for the freight bridge. There will be little change to the vegetation, the primary element contributing to the vividness of the view. Although visually quite different from the existing bridge, the new bridges will be neutral in terms of their contribution to vividness. As a consequence, the level of vividness will remain the same. The intactness of the view will be reduced by replacement of the wood trestle bridges with the concrete bridges that will have the mass, light color, and curving form to provide a higher level of contrast with the setting. The increased clearance and openness under the bridges will create a visual connection between the segments of the lagoon north/south of the new bridges. However, the overall unity of the view will be reduced slightly by the mass and curved lines of the bridge for the trail crossing. The overall degree of change to the visual quality of the view will be low. Because of the recreational activity in the channel, this view is visually sensitive. However, because the potential degree of change to visual quality will be low, the potential visual impact will be low.

Viewpoint 17 – View from the Burnham Road Bridge Looking Southeast down the Channel toward the Kenilworth Corridor Bridges (Exhibit J-22)

Level of Impact: Substantial

As noted above, the existing wood trestle bridge will be replaced by three new concrete bridges. Construction of these bridges will require noticeable clearing of trees and other vegetation on the west side of the right-of-way. The vividness of this view will be decreased somewhat by the removal of vegetation in the area along the channel at the right-of-way and the replacement of the rustic-appearing wooden trestle bridge with a less distinctive structure. The cleared areas along the right-of-way, and the heavy forms and light color of the new concrete bridges, as well as the catenaries, will contrast substantially with the setting, reducing the level of visual intactness. The visual unity of this view will be reduced by the break created in the formerly continuous tree cover along the channel, and the addition of the three concrete bridges will create a strong vertical form across the view and interfere with views down the channel. The overall degree of visual change will be high. This high degree of change, combined with the high level of visual sensitivity of residents within the surrounding residential area who use the bridge, will result in an overall level of impact that is substantial.

Viewpoint 18 – View Toward the Kenilworth Corridor Crossing of West 21st Street (Exhibit J-23)

Level of Impact: Low

Development of the proposed light rail alignment and 21st Street Station will have a limited impact on this view. The associated station and support facilities will be hidden behind the thick band of trees between the Kenilworth Corridor and West 22nd Street, which is visible at the left side of the view. The light rail tracks will be at-grade; from this vantage point, where they can be seen crossing 21st Street, they will appear to be generally similar to the existing freight trail. Some limited removal and thinning of the vegetation on the left side of the view will partially expand the view.

Removal of trees on the left side of the view will slightly decrease the vividness of the view. However, the addition of the street trees, the widened sidewalk, and the plantings depicted in the simulation in the area along the tracks will make a positive contribution. Therefore, the level of vividness will remain the same. The level of intactness of the view will also remain approximately the same. Visual unity will increase slightly because the light rail facilities will be consistent with the alignment of the existing trail and freight rail tracks, and the removal of the utility pole and the addition of the sidewalks along the west side of 21st Street will enhance the composition of the view. The visual impact of the Project will be a slight improvement in the quality of the view. Because this view is seen by the occupants of homes in the nearby residential areas and those using the trail, the level of visual sensitivity is high. Although the sensitivity of the viewers in this area is high, because the degree of change to visual quality will be low, the level of visual impact will be low.

Minneapolis Downtown Fringe

This summary of the impacts in this VAU is supported by Exhibit J-25, which presents the existing conditions photograph from the only analysis viewpoint in this area selected, and a simulation that depicts the Project conditions. Table J-12 in Appendix J evaluates the anticipated visual changes that will occur in the view from this viewpoint. The brief narrative that follows summarizes the visual changes and the nature and degree of visual impact on each of the views.

Viewpoint 19 – Royalston Avenue North at Holden Street North, View Looking North Toward the Site of the Proposed Royalston Station (Exhibit J-25)

Level of Impact: Low

Development of the light rail alignment will remove the current northbound street lanes, the street center, and the large trees within it. The light rail tracks, perimeter fencing, and OCS will be visually prominent in the foreground of the view. In addition, the station will be readily visible. There will be little change in vividness. The street center and trees that provide moderately vivid elements of the existing view will be removed, but this loss will be compensated for by the station, which will become the focal point. The level of visual intactness will be similar to existing conditions. The tall utility poles currently within the view will be removed, but the OCS will appear as new intrusive elements in the view. The visual unity will be increased based on implementation of the light rail features, and these new features will add a system of visually connected components to the view that will lead to an increase in the level of visual unity. In this view, development of the light rail alignment will create a slight improvement in the view's degree of visual quality. Because the degree of change to visual quality will be low, the level of visual impact will be low.

3.7.3.2 Long-term Indirect Visual Quality and Aesthetic Impacts

Some indirect visual impacts are possible in the long-term, because the improved accessibility of the areas around the stations will create potential opportunities for new development, including higher residential densities and, in some cases, new or expanded commercial activities. In areas where this occurs, the built environment is likely to appear more intensively developed and possibly more urbanized in character than what exists at present. The extent to which this development will have visual effects will depend upon the effectiveness of planning, development control, and urban design policies and regulations of the communities in which the development takes place.

3.7.3.3 Short-term Visual Quality and Aesthetic Impacts

In each of the VAU, the potential short-term impacts that will occur on the viewpoints evaluated while constructing the Project will be associated with construction staging areas; concrete and form installation; lights and glare from construction areas; and dust and debris.

3.7.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term visual quality and aesthetic impacts.

This analysis determined that of the 19 views evaluated, substantial visual impacts will occur in six of the views, moderate impacts will occur in six of the views, and low visual impacts will occur in seven of the

views. To reduce the substantial and moderate visual impacts to levels that are less than substantial, mitigation measures will be incorporated into the Project.

3.7.4.1 Long-term Mitigation Measures (Substantial and Moderate Impacts)

Impact. Introduction of light rail structures including overhead features, retaining walls, tunnel portals, and noise walls and increased level of development.

Mitigation. Council has prepared design guidelines for key structures throughout the proposed light rail alignment, focusing on bridges and retaining walls. Those guidelines are included within the *Visual Quality Guidelines for Key Structures* (Council, 2015 – refer to Appendix C to access the Guidelines). These guidelines were developed by the Council, reflecting various coordinating efforts with affected local jurisdictions. The guidelines have been used by the Council in the advancement of the Project's design and development of final design plans. The guidelines have and will help to ensure a consistent aesthetic element for key structures throughout the proposed light rail alignment, while allowing for some flexibility in wall treatments. The guidelines include the following design elements for key structures:

- Universal parameters for structures aesthetic elements
- Utilization of special treatments/aesthetic finishes
- Uniform pier and abutment pilaster forms
- Open concept pedestrian underpasses

Some structures that are a part of other relatively large facilities have been designed to reflect the context of these other large facilities to allow for continuity of design with these facilities. These exceptions to the guidelines where context sensitive designs have and will be prepared include the proposed light rail structures over Highway 212, I-394 and Highway 100, as well as individual retaining wall and bridge designs at 5th Avenue South and 7th Avenue South, Hopkins.

Impact. Removal of existing vegetation and introduction of built features

Mitigation. Design and implement landscaping into the Project design at appropriate locations to address identified visual impacts, within available landscape budget and balancing other priorities for landscaping (e.g., surface water quality, habitat preservation, species of concern), which could include the following:

- Retain as much of existing vegetation as appropriate to provide shielding for sensitive viewpoints, including techniques such as chaining and mowing without removal of the root systems, and/or tying back large shrubs and trees to provide adequate areas for construction activities.
- Restore and replant cleared areas in a timely manner, where appropriate, considering such factors as species type, seasonal growing conditions, and other construction-related activities.
- Place new and replacement trees based on such factors as helping to provide the maximum screening of views to and from sensitive viewpoints (e.g., adjacent residential areas) or providing street ornamentation, where appropriate.
- Develop landscape plans for areas adjacent to elevated structures, retaining walls, noise walls, and TPSS sites³⁰ to achieve such effects as providing partial screening from sensitive viewpoints.
- Incorporate visual mitigation measures for Section 106-protected resources and Section 4(f)-protected properties as specified in the Section 106 Memorandum of Agreement and the Final Section 4(f) Evaluation, respectively (see Appendix H and Appendix I, respectively).

³⁰ A traction power substation (TPSS) is an electrical substation that converts electric power from the form provided by the electrical power industry for public utility service to an appropriate voltage, current type, and frequency to supply railways, trams (streetcars), or trolleybuses with traction current.

3.7.4.2 Short-term Mitigation Measures

Impact. Temporary introduction of construction activities, including staging and storage areas, and temporary removal of vegetation and trees.

Mitigation. The design guidelines prepared by the Council also include provisions for mitigation of the short-term impacts associated with the Project's construction phase. Measures to address short-term construction impacts include the following, where appropriate and practical:

- Locate staging areas in places where their visibility will be minimal and, to the extent required, provide temporary visual screening to limit views into them from nearby residential areas, trails, streets, or other places from which they will be seen by visually sensitive viewers.
- Use construction methods that minimize the need to remove vegetation to accommodate construction activities.
- Minimize and shield lighting needed for staging areas or for nighttime construction activities.
- Restore areas disturbed during construction.

3.8 Geology and Groundwater Resources

This section describes long-term direct and indirect effects and short-term (construction) direct and indirect effects of the Project on geology and groundwater conditions (see Sections 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis; a description of existing soils, bedrock geology, groundwater resources, the sensitivity of groundwater to pollution, and potable water supply conditions; anticipated environmental consequences related to geology and groundwater; and a description of mitigation measures to implement with the Project.

3.8.1 Regulatory Context and Methodology

This section includes a summary of relevant laws and regulations and an overview of the methodology FTA and the Council used to evaluate geology and groundwater resources within the Project's limits of disturbance.

In Minnesota, geologic resources are rarely regulated, aside from groundwater pumping. The Minnesota Department of Natural Resources (MnDNR) requires a permit to pump groundwater in excess of 1.0 million gallons per year or 10,000 gallons per day. A National Pollutant Discharge Elimination System (NPDES) permit regulates the discharge from groundwater pumping and is required for construction activities. If the pumped groundwater is contaminated, an individual NPDES permit from the Minnesota Pollution Control Agency (MPCA) is required or the groundwater can be discharged to the sanitary sewer system, if approved by Metropolitan Council Environmental Services.

Wellhead protection is a way to prevent groundwater used as drinking water from becoming polluted by managing potential sources of contamination that could adversely affect groundwater quality. The cities of Eden Prairie, Minnetonka, Hopkins, and St. Louis Park have completed the second part of their respective Wellhead Protection Plan (WHPP), in accordance with Minnesota Rules Chapter 4720.5200. The purpose of the WHPP is to assure that the water supply for the cities is adequately protected through existing and new land use ordinances, in association with Hennepin County oversight. The WHPP includes the Wellhead Protection Area and the Drinking Water Supply Management Area.³¹ The location of the Drinking Water Supply Management Areas and Wellhead Protection Areas along the LRT alignment are shown in

³¹ A Wellhead Protection Area is the recharge area to a public well and is the area managed by the public water supplier, as identified in the Wellhead Protection Plan, to prevent contaminants from entering public wells. A Drinking Water Supply Management Area is the Minnesota Department of Health (MDH)-approved surface and subsurface area surrounding a public water supply well that contains the entire scientifically calculated Wellhead Protection Area and is managed by the entity identified in a Wellhead Protection Plan. The boundaries of Drinking Water Supply Management Areas are delineated by identifiable physical features, landmarks, or political and administrative boundaries.

Exhibit 3.8-1. The City of Minneapolis has a Source Water Protection Plan, which addresses data elements and their assessments; impacts of changes on the public water supply; issues, problems, and opportunities; source water protection goals, objectives, and action plans; program evaluation; and an alternative water supply/contingency strategy. Before beginning construction of the Project, the Council will coordinate with the host cities to confirm that constructing and operating the Project will meet the provisions of the individual WHPPs and the Source Water Protection Plan.

The Council reviewed published maps, professional publications, and reports pertaining to the local geology and geological hazards (e.g., karst³² formations, near-surface bedrock), soils, and groundwater in the project vicinity to describe existing conditions and the project's potential impacts. The information reviewed includes United States Geological Survey (USGS) geologic maps; Natural Resources Conservation Service (NRCS) soils maps, the *Geologic Atlas of Hennepin County* (Minnesota Geological Survey, 1989), and the County Well Index (Minnesota Department of Health [MDH, 2007]). See Appendix D for a list of referenced documents.

In addition to the literature search, the Council conducted soil and groundwater investigations to obtain more-specific data along the proposed Project limits of disturbance. The reports documenting the findings of the Council's field investigations are located in *Southwest LRT Project Geology and Groundwater Evaluation Supporting Documentation* (see Appendix C for instructions on how to access supporting documentation).

3.8.2 Affected Environment

This section describes the existing geology and groundwater resources within the Project's limits of disturbance. Geology and groundwater conditions are important considerations to the Southwest LRT Project because they can affect construction methods used for the Project.

3.8.2.1 Geology

The following sections describe existing soils and bedrock geology within the Project's limits of disturbance.

A. Soils

For the purposes of this section, all material between the ground surface and the top of bedrock is referred to as soil. Nearest the ground surface is a layer of topsoil. Between the topsoil and bedrock are layers of material including sand and silt, clay and mineral deposits, and finally slightly broken up bedrock. There is less organic material in the material closest to bedrock than in topsoil.

Along the Project's limits of disturbance, the depth of the soil zone varies notably. Based on information obtained from soil borings, surface soil depths generally vary between four to 20 feet, but some borings have surface soil depths to about 50 feet. Soil in portions of the Project's limits of disturbance in the railroad corridor and urban areas contain debris, organic soils, roots, and ashes/cinders.

Exhibit 3.8-2 illustrates the location of various sediment deposits beneath the topsoil zone along the proposed light rail alignment. Plate 3, Surficial Geology, from the *Geologic Survey of Hennepin County* (Minnesota Geological Survey, 1989), includes a description of deposits listed in Exhibit 3.8-2, and several cross sections showing the variability of soil layers beneath the surficial soils shown in Exhibit 3.8-2.

This section first describes the soil condition in the corridor that tend to accommodate construction of facilities included within the Project (coarse-grained soils), followed by a discussion of compressible soils that may require remediation to accommodate construction of elements of the Project (e.g., soil removal and replacement, deep foundations).

Coarse-Grained Soils

Most of the geology and groundwater study area is made up of coarse-grained soils. Coarse-grained soils are made up of silts, sands, and gravels. These soils are typically resistant to settlement and would provide good

³² Karst is a geological formation that results from portions of a layer or layers of soluble bedrock being dissolved by water. The dissolution of rock can lead to features such as caves, sinkholes, and springs.

EXHIBIT 3.8-1

Drinking Water Supply Management Areas, Wellhead Protection Areas, and Known Private Wells

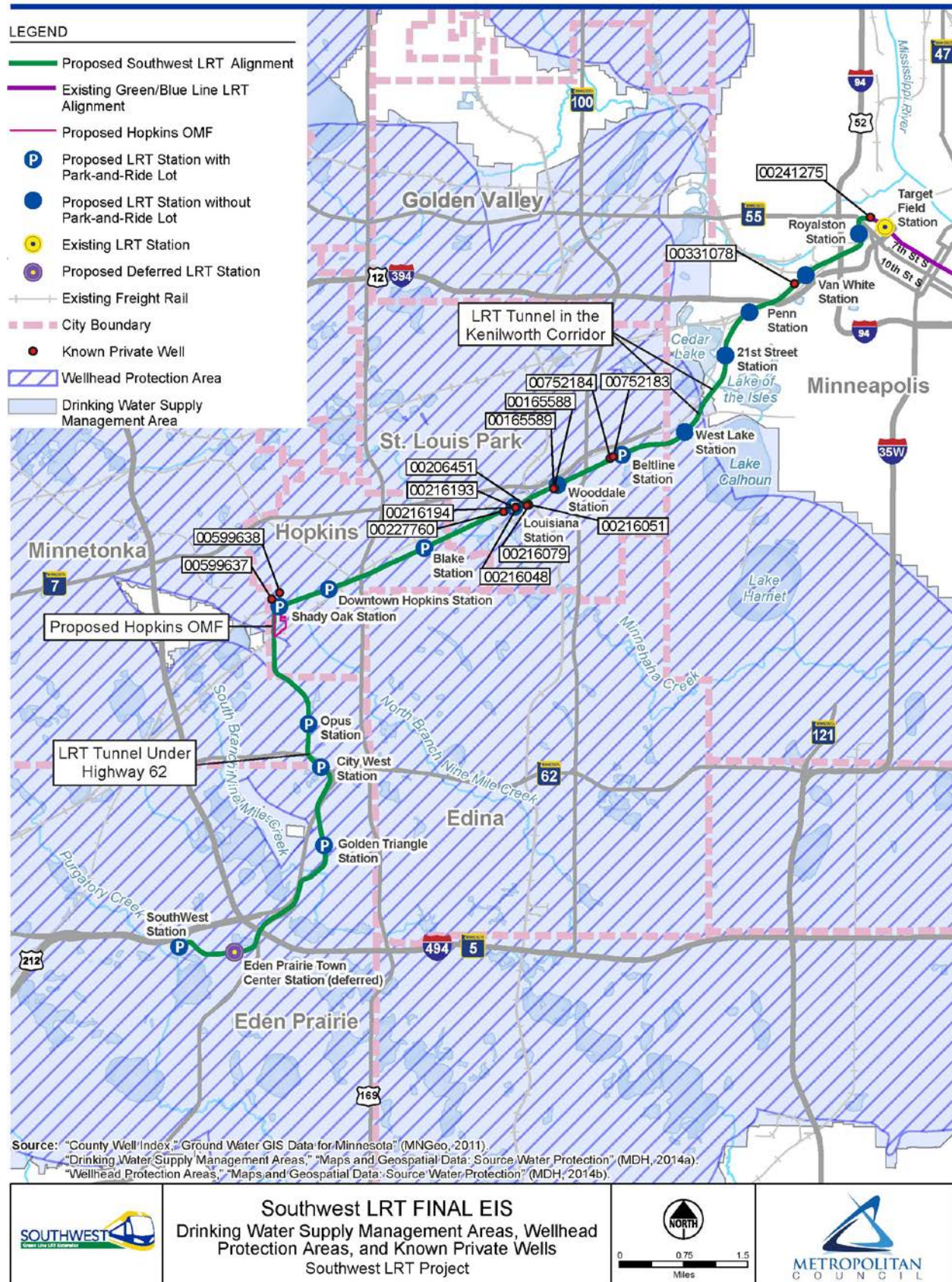
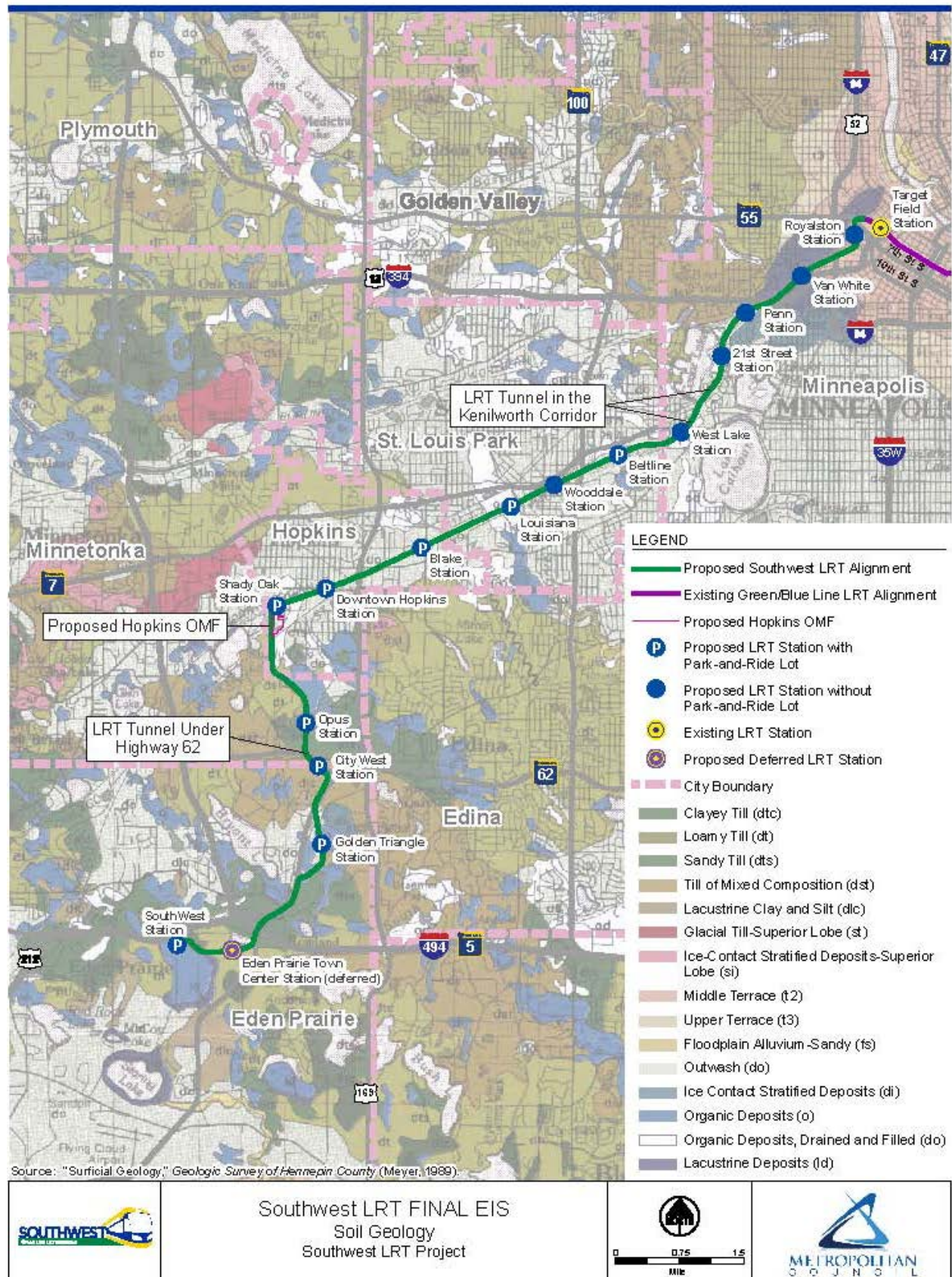


EXHIBIT 3.8-2

Soil Geology



bearing support for light rail structures, including stations and track sections. Exhibit 3.8-2 illustrates the location of various sediment deposits beneath the topsoil zone along the proposed light rail alignment.

Compressible Soils

The organic deposits within the limits of disturbance show compressibility, which is the degree to which a soil mass decreases in volume when supporting a load. Peat, organic silts, and fat clays are examples of soils that exhibit a high degree of compressibility. These soils are referred to as compressible soils. From a construction standpoint, the problem with compressible soils is that they settle unevenly under the weight of heavy features, such as LRT stations and parking structures. The uneven settling and depth of settling can exceed tolerances that buildings such as LRT stations and parking structures and surface parking areas can bear and potentially create structural problems. For construction associated with the Project, it is expected that areas of compressible soils will require remediation, such as soil replacement and/or pile foundations. Exhibit 3.8-3 illustrates only the compressible soils. The soils located along the proposed light rail alignment in Exhibit 3.8-3 that are not categorized as “compressible soils” are generally considered to be coarse-grained soils. Soil investigations conducted by the Council generally confirmed the locations of compressible soils identified in the *Geologic Atlas of Hennepin County* (Minnesota Geological Survey, 1989). *Southwest LRT Project Geology and Groundwater Evaluation Supporting Documentation* contains the soil investigation reports (see Appendix C for instructions on how to access supporting documentation).

B. Bedrock

Bedrock is a deposit of consolidated rock that is typically buried beneath soil and other broken or unconsolidated material and it often serves as the parent material (the source of rock and mineral fragments) for subsoil and topsoil. Bedrock’s function as a groundwater-bearing unit is discussed in Section 3.8.2.2 “Potable Water Supply.”

The uppermost bedrock along the proposed light rail alignment consists of (from youngest to oldest) the Platteville (limestone) and Glenwood (shale) formations, St. Peter Sandstone (sandstone), and Prairie du Chien Group (dolostone). According to the Minnesota Pollution Control Agency’s publication *Groundwater Investigations in Karst Areas* (Guidance Document 4-09), a large area of southeastern Minnesota, including the area surrounding the light rail alignment, is underlain by soluble carbonate bedrock of the Prairie du Chien Group and stratigraphically higher carbonate formations. This area is subject to karst processes. Exhibit 3.8-4 illustrates the uppermost bedrock units along the proposed light rail alignment (Olsen, 1989).

3.8.2.2 Groundwater Resources

The water table is the boundary below which geologic materials are completely saturated with groundwater. The interval between the land surface and the water table is called the unsaturated zone. The depth from the surface to the water table depends on a variety of factors, including the elevation of nearby surface water features, the permeability of the geologic materials (a quality that allows fluids to flow through it), and surface topography.

The soil investigations the Council conducted included measurements of groundwater elevation. In general, the distance of groundwater from the surface within the Project’s limits of disturbance west of the OMF is more variable than east of the OMF. West of the OMF, groundwater was generally observed 5 to 40 feet from the surface; however, in some cases groundwater was observed 60 to 75 feet from the surface or not observed. At the OMF, groundwater was observed 2 to 14 feet from the surface. Between the OMF and West Lake Station, groundwater was observed 4 to 32 feet from the surface. Within the Kenilworth Corridor (approximately between West Lake Station and Penn Station), groundwater was generally observed 15 to 25 feet from the surface, with some areas near West Lake Street Station where groundwater was observed approximately 10 feet from the surface. More detailed information about groundwater elevations can be found in *Southwest LRT Project Geology and Groundwater Evaluation Supporting Documentation* (see Appendix C for instructions on how to access supporting documentation) and in Burns and McDonnell, 2014 (Appendix D).

EXHIBIT 3.8-3

Compressible Soils

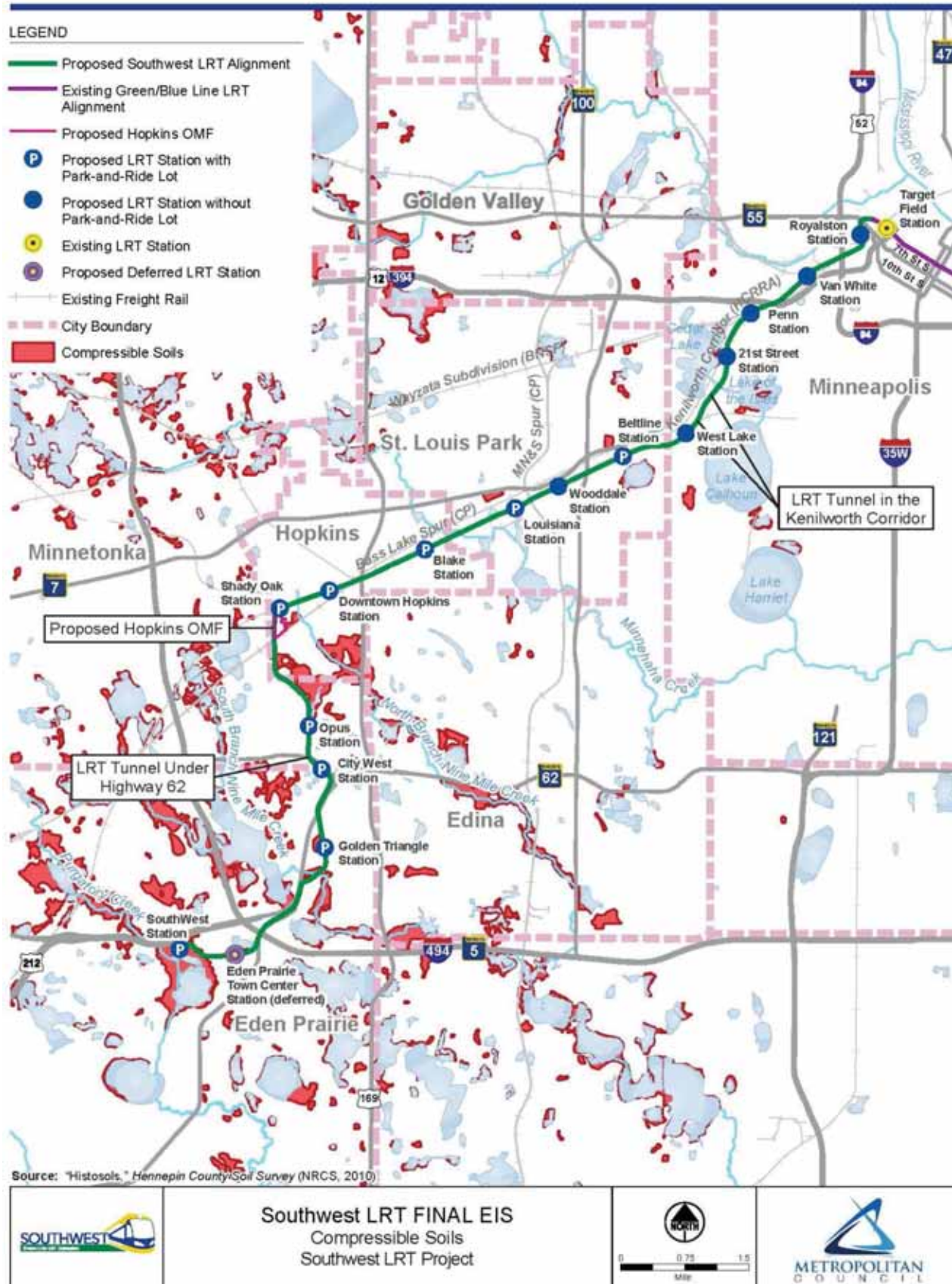


EXHIBIT 3.8-4

Bedrock Geology



Additionally, within the Kenilworth Corridor Cedar Lake and Lake of the Isles are connected by the Kenilworth Lagoon. Prior to construction of the lagoon in the early 1900s, the water level in Cedar Lake was several feet higher than in Lake of the Isles, causing an eastward groundwater flow from Cedar Lake east toward Lake of the Isles. Construction of the lagoon allowed stabilization of water levels in the two lakes to a common level, and the groundwater gradient between the two lakes was minimized or eliminated. The *Kenilworth Shallow LRT Tunnels Water Resources Evaluation* (Burns and McDonnell, 2014) noted that the lagoon may be feeding the groundwater aquifer rather than the aquifer feeding the lagoon.

The remainder of this section addresses the sensitivity of groundwater to surface and sub-surface pollutants.

A. Groundwater Sensitivity

The sensitivity of an aquifer to surface pollutants is based on the degree of protection provided by geologic materials overlying it. This is dependent on the vertical travel time required for a waterborne contaminant release at or near the land surface to enter the groundwater. Vertical travel time is primarily controlled by the permeability of the sediments and their thickness. This subsection discusses the sensitivity to pollution of the water table system, the uppermost groundwater resource that is not used as a source of drinking water. Information about the sensitivity to pollution of the Drinking Water Supply Management Areas, which draw from the Prairie du Chien-Jordan aquifer, the most heavily used source of groundwater in Hennepin County, is found in the following subsection.

Exhibit 3.8-5 illustrates zones of high or very high sensitivity to pollution of the water table (shallow groundwater) along the proposed light rail alignment and related facilities (*Geologic Atlas of Hennepin County*, Piegat [1989]). The legend of the exhibit defines zones of sensitivity. See Section 3.14 for information on hazardous and contaminated materials.

B. Potable Water Supply

Shallow groundwater in the unconsolidated geologic materials below the topsoil zone is not used as a source of potable (drinking) water by municipalities along the proposed light rail alignment. Groundwater found in the deeper bedrock aquifers beneath the unconsolidated sediments and the Mississippi River are used as sources of potable water by municipalities along the proposed light rail alignment. Not all properties within Eden Prairie use municipal drinking water; some are served by private wells. These wells are outside of the Project's limits of disturbance.

Municipal wells along the proposed light rail alignment draw from one or more of the following aquifers: Prairie du Chien-Jordan, Mt. Simon, Jordan-St. Lawrence, and St. Peters aquifers. The Mississippi River is the sole source of water supply for Minneapolis.³³ According to information provided by the Council, there are no public water supply wells within the Project's limits of disturbance. Fifteen private wells³⁴ are located within the limits of disturbance. Exhibit 3.8-1 illustrates the locations of private wells within the limits of disturbance. The uses for the private wells are monitoring, industrial, domestic, test, air conditioning, and scientific research. Exhibit 3.8-1 also illustrates Drinking Water Supply Management Areas, as well as Wellhead Protection Areas.³⁵ Exhibit 3.8-6 illustrates Drinking Water Supply Management Area vulnerability to pollution.

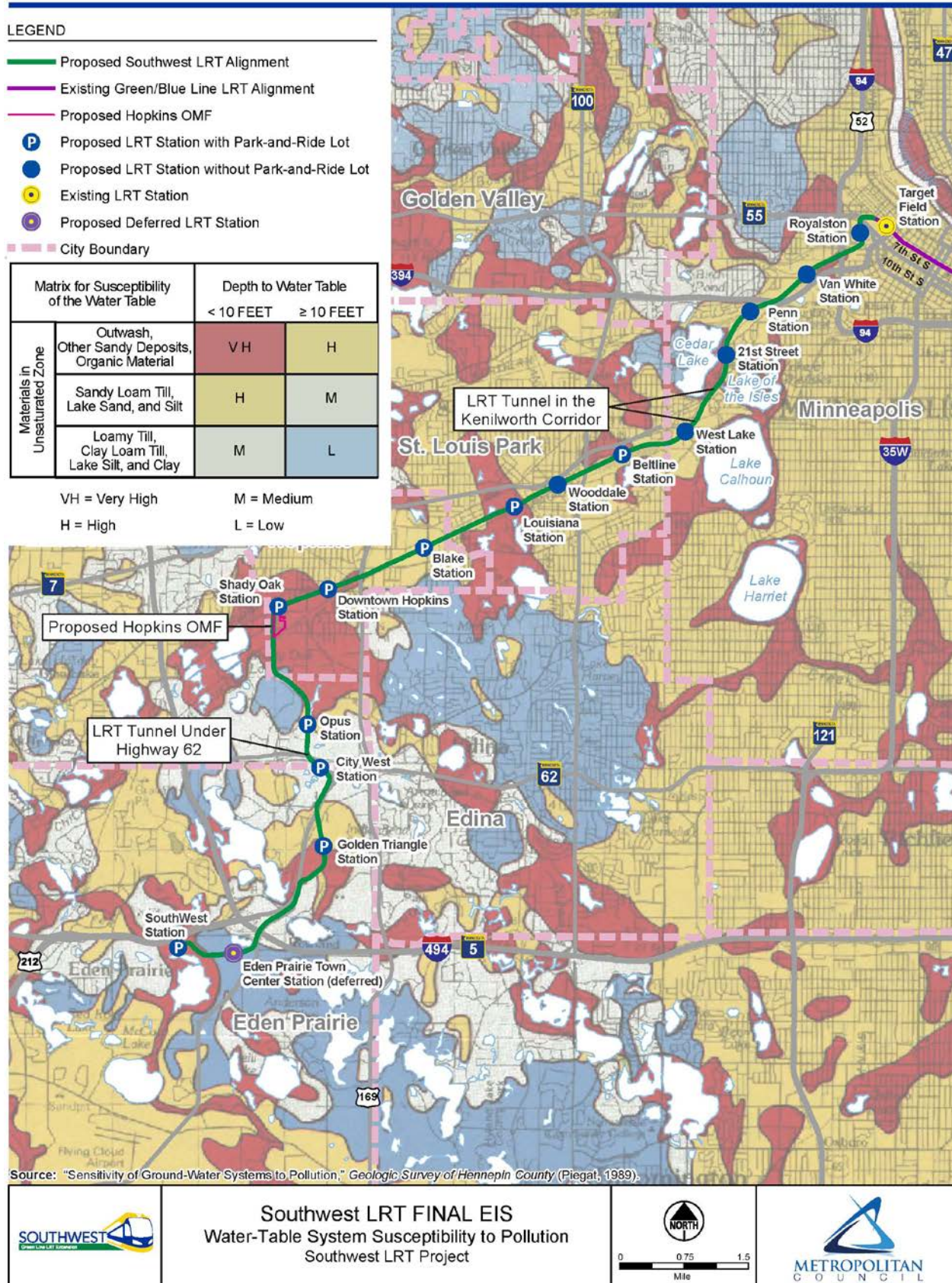
³³ Additional information regarding municipal drinking water can be found at the following sites: Eden Prairie (<http://www.edenprairie.org/community/living-green/groundwater-and-drinking-water/drinking-water-faq>), Minnetonka (<http://eminnetonka.com/documents/utilitydocs/tap-water-quality-report-2013.pdf>), Hopkins (<http://www.hopkinsmn.com/services/water/pdf/water-quality2014.pdf>), St. Louis Park (http://www.stlouispark.org/webfiles/file/public-works/2014_water_report_final.pdf), and Minneapolis (http://www.minneapolismn.gov/publicworks/water/water_waterfacts).

³⁴ Private wells are those that do not supply the public water system.

³⁵ The location of wells that supply public water systems cannot be mapped as per the Homeland Security Act of 2002.

EXHIBIT 3.8-5

Water-Table System Susceptibility to Pollution



3.8.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts on geology and groundwater from the Project.

3.8.3.1 Geology

A. Long-term Direct Impacts on Geology

Long-term direct geology impacts are organized into four categories: (1) uneven ground settlement; and (2) tunnels and underpasses, (3) engineered cut-and-fill locations, and (4) bedrock and karst.

- **Uneven Ground Settlement.** Soil and groundwater investigations conducted after the approval of the Draft EIS found that, in general, glacial soils are common along the proposed light rail alignment. These soils are coarse-grained and typically resistant to settlement during construction and operation, and will provide good bearing support for the proposed stations and track. Glacial soil will allow normal construction methods to build foundations for elevated light rail structures. Foundations for elevated guide ways and stations could include either driven piles or drilled shafts. Both foundation types perform well in glacial soil.

Throughout the proposed light rail alignment, there are areas of compressible soils, which are illustrated in Exhibit 3.8-2. Areas of compressible soils along the Project will be addressed with appropriate design and construction techniques to avoid the potential for uneven ground settlement and bearing failure of the building foundations for the light rail alignment, stations, structures, and surface parking lots/parking structures. Methods of addressing soft soils include removing the soft soils and replacing them with suitable fill, deep foundations, driven piles, drilled shaft-supported foundations, or lightweight fill. The Council will continue to evaluate compressible soils during the Engineering phase and will obtain additional soil data where necessary to assist in making the decision about where to excavate and replace soft soils. Compressible soils excavated during construction that are not contaminated will either be used as non-structural fill at other locations along the Project or placed in an upland location outside the Project. No soils will be placed in floodplains or wetlands unless permitted.

- **Tunnels and Underpasses.** The Project includes two proposed cut-and-cover light rail tunnels: (1) located under Highway 62 in Eden Prairie and Minnetonka, and (2) in the Kenilworth Corridor in Minneapolis (illustrated on Exhibit 3.8-1 and Appendix E and described in Section 2.1.1). As compared to the saturated and unsaturated soil that will be removed from the tunneled zones, both the proposed cut-and-cover tunnels will be relatively light in weight, resulting in little, if any change in load. Therefore, settlement of the non-organic soils (sand, silt, gravel) in the area of the tunnels will likely be negligible and will not affect other structures located in the vicinity of the tunnel, such as roadways, utilities, freight rail tracks, and nearby buildings.

The Project will also include six proposed bicycle and pedestrian underpasses that will require excavation (illustrated in Appendix E). Because of the soils that will surround the proposed underpasses and the design measures that consider soil quality, it is not expected that poor soils will create a problem at the underpasses during or after construction.

- **Engineered Cut-and-Fill Locations.** To maintain a suitable grade for LRT operations, the topography along the proposed light rail alignment will be modified through cutting (excavating soil to decrease elevation) and filling (adding soil to increase elevation). Cutting and filling will occur within the Project's groundwater and geology study area. The proposed light rail alignment in the eastern portion of the Project is largely on an existing freight rail right-of-way, which is already at or near a suitable grade for light rail operations. Therefore, little cutting or filling will be needed. The proposed cut locations along the proposed light rail alignment are summarized and illustrated in various reports located in *Southwest LRT Project Geology and Groundwater Evaluation Supporting Documentation* (see Appendix C for instructions on how to access supporting documentation).

- **Bedrock and Karst.** Of the borings the Council performed, two encountered bedrock at 84 feet and 96 feet. In addition, the borings did not encounter karst conditions during the field investigation. Therefore, no direct impacts on bedrock geology are expected.

B. Long-term Indirect Impacts on Geology

Section 3.1.3.1.B notes that light rail lines can advance the timing and increase the intensity of development, within the limits allowed by local comprehensive plans, particularly surrounding proposed station areas. If new development occurs within the proposed station areas, no indirect impacts to soil or bedrock are expected because of the existing disturbed soils underlying these areas.

C. Short-term Impacts on Geology

For construction activities at- or above-grade, sub-soil will be exposed during construction when topsoil is removed. This soil will be susceptible to surface-water and wind erosion. Wildlife-friendly BMPs will be used to avoid the potential effects of soil erosion. The Council will develop a stormwater pollution prevention plan (SWPPP) as a part of the permitting process. The plan will identify BMPs for reducing discharges of pollutants, including sediment from erosion.

3.8.3.2 Groundwater Resources

A. Long-term Direct Impacts on Groundwater Resources

Long-term direct groundwater resource impacts are organized into three categories: (1) groundwater flow/groundwater level impacts, (2) groundwater quality impacts, and (3) drinking water supply impacts.

- **Groundwater Flow/Groundwater Level Impacts.** The proposed Project is expected to encounter perched groundwater³⁶ and areas of high groundwater (saturated soils). Foundations for Project's light rail stations and park-and-ride facilities, or cut-and-fill features (e.g., tunnels and underpasses) will result in relatively minor localized changes in groundwater flow. In areas where the Project could prevent the movement of shallow groundwater, drainage features such as French drains will be installed to allow normal groundwater flow and prevent ponding.

Within the Kenilworth Corridor, groundwater modeling studies to evaluate the impacts of the Kenilworth Tunnel on water levels in the vicinity of the tunnel show that, because of the sandy soil conditions and lack of groundwater flow in the vicinity of the tunnel, groundwater will rise and fall equally around the tunnel. The amount of water that could be collected by the tunnel's internal water control system is expected to be a small percentage of the water budget for the lakes. When the role of precipitation on the broader Kenilworth Corridor area is considered, the amount of water collected by the tunnel's internal water control system will not affect groundwater or lake levels.

The Project will not adversely affect groundwater flow in the groundwater study area. See *Southwest LRT Project Geology and Groundwater Evaluation Supporting Documentation* (see Appendix C for instructions on how to access supporting documentation) and Burns and McDonnell (2014) for additional information.

- **Groundwater Quality Impacts.** The operation of the light rail system is not expected to affect the quality of shallow groundwater because the trains will be electric, and, generally, there are no activities associated with train operation that generate pollutants. See Section 3.14 for more information on containment of hazardous and contaminated materials at the OMF.

³⁶ "Perched groundwater" is unconfined groundwater separated from an underlying body of groundwater by an unsaturated zone. Perched groundwater may be either permanent where recharge is frequent enough to maintain a saturated zone above the perching bed or temporary where intermittent recharge is not great or frequent enough to prevent the perched water from disappearing from time to time as a result of drainage over the edge or through the perching bed (<https://www.revisor.leg.state.mn.us/rules/?id=7060&date=2007>).

The two light rail tunnels (under Highway 62 and in Kenilworth Corridor) have been designed to minimize the inflow of groundwater through use of various design features and BMPs (see *Kenilworth Shallow LRT Tunnel Basis of Design Technical Report* located in *Southwest LRT Project Geology and Groundwater Evaluation Supporting Documentation* [see Appendix C for instructions on how to access supporting documentation]). In summary, water collected at the tunnel portals will be routed through pumps, through a pretreatment system that captures debris and sediments and through an underground infiltration chamber, which will allow the water to enter into the groundwater system. If water enters the internal tunnel, it would likely be groundwater entering via small cracks or joints in the concrete walls, floors, and ceilings. In addition, some water could enter the internal tunnel by light rail trains (e.g., dripping, melting ice). Water collected in the tunnel will be treated, if required, and pumped to the adjacent sanitary sewer systems owned by either the City of Minneapolis or Metropolitan Council Environmental Services.

- **Drinking Water Supply Impacts.** For similar reasons to those discussed above under “Groundwater Quality Impacts,” the Project is not expected to adversely affect the groundwater quality in the aquifers used for public drinking water. The depths of proposed cuts and the piles that will be used in various locations along the proposed light rail alignment will be above the depths of the municipal wells used in Eden Prairie, Minnetonka, Hopkins, and St. Louis Park.

B. Long-term Indirect Impacts on Groundwater Resources

Long-term indirect impacts may occur as commercial, transportation, and industrial activities in the Project’s vicinity increase, potentially resulting in long-term groundwater impacts. Activities associated with future development will be held to regulatory standards and requirements no less stringent than those outlined in this Final EIS.

C. Short-term Impacts

Potential short-term shallow groundwater impacts associated with the Project are (1) the potential for groundwater contamination; (2) the potential that structures, roadways, and utilities may settle; and (3) potential for changes to waters of the United States, including wetland hydrology and vegetation (where wetlands are groundwater fed). A brief description of each category of potential short-term impacts follows.

- **The Risk of Groundwater Contamination during Construction.** Because the Project will be constructed with engineering controls to limit and contain releases and spills, the likelihood of soil and groundwater contamination during construction will be minimized. See Section 3.17.14 for additional information on construction impacts related to hazardous and contaminated materials.

Where temporary groundwater pumping may be needed during construction, the Project will adhere to permit requirements related to groundwater pumping and discharge from groundwater pumping, thereby minimizing the potential of adverse groundwater quality impacts. Coordination with private well owners will occur as part of MnDOT Field Title meetings and subsequent acquisition negotiations if there is an acquisition from a parcel with such a well. Impacts caused by temporary groundwater pumping during construction of the tunnel in the Kenilworth Corridor will be minimized as described in the *Kenilworth Shallow LRT Tunnel Basis of Design Technical Report* located in *Southwest LRT Project Geology and Groundwater Evaluation Supporting Documentation* (see Appendix C for instructions on how to access supporting documentation).

- **The Risk of Settlement because of Groundwater Removal during Construction.** Removing shallow groundwater during construction may increase the risk of soil subsidence, building and utility settlement, and cracks to foundations and pavement. The Council has determined that the risk is very low that groundwater removal during construction will cause buildings to settle. To help minimize that risk, proper BMPs associated with groundwater removal will be employed during construction. Further, Project construction documents will include contractor requirements to address groundwater removal plans.
- **The Risk of Changes to Waters of the United States because of Groundwater Removal during Construction.** Although the Council is considering the use of infiltration ponds as a means of recharging

the shallow aquifer and minimizing impacts on the interaction among groundwater and surface water resources, it is possible that pumped groundwater will be discharged to the storm sewer and sanitary sewer systems. If the discharge points are in the general area where the groundwater is being pumped, groundwater discharged to the storm sewer system has the potential to discharge to project-area streams and the shallow aquifer. Within Minneapolis, groundwater discharged to the sanitary sewer system will be sent to the treatment plant on the Mississippi River, which will not recharge the shallow aquifer.

3.8.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term geology and groundwater impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Sections 3.8.3.1 and 3.8.3.2 for additional information on the identified geology and groundwater resource impacts, avoidance measures, and BMPs, respectively).

3.8.4.1 Geology

No mitigation measures are warranted for long-term or short-term impacts to geology, because there will be no adverse impacts to geology due to the effectiveness of identified avoidance measures and BMPs.

3.8.4.2 Groundwater Resources

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term groundwater impacts.

A. Long-term Mitigation Measures

Impact. Risk of long-term groundwater contamination.

Mitigation. A groundwater management plan will be prepared by the Council, and approved by MnDNR and applicable local jurisdictions before construction. That plan will address collection, storage, and disposal of surface water runoff and pumped groundwater following construction of the Project. In developing the groundwater management plan, the Council will consider MDH's concerns about the placement of stormwater handling facilities in or near wellhead protection areas.³⁷

Mitigation. Particularly within the Kenilworth Corridor, the groundwater management plan will include monitoring, which will be used to assess excessive groundwater infiltration and to prioritize any potential repairs to the waterproofing systems. The Project's plan will be based on an appropriate safety factor, to be determined in consultation with the City of Minneapolis, MCWD and the MnDNR, which will be applied to pumping rates and yearly pumping volumes in calculating maximum inflow amounts.

B. Short-term Mitigation Measures

Impact. Short-term risk of settlement of buildings in the vicinity of construction groundwater pumping.

Mitigation. The Council will develop and implement a monitoring plan that provides means for detecting the settlement of buildings, roads, or parking areas, so that additional remediation methods could be employed if necessary.

Impact. Short-term risk of groundwater and drinking water contamination during construction and short-term risk of changes to waters of the United States because of groundwater removal during construction.

Mitigation. A groundwater management plan will be prepared by the Council, and approved by MnDNR and applicable local jurisdictions before construction. That plan will include required groundwater monitoring and management practices during construction.

³⁷ MDH's concerns can be found in its *Source Water Protection Issues Related to Stormwater* memorandum, available at <http://www.health.state.mn.us/divs/eh/water/swp/stormissue.pdf>.

Mitigation. All water or monitor wells or boreholes the Council installed as part of its soil and groundwater investigations will be sealed and abandoned as required by the MDH regulations. If any previously unidentified wells are encountered during project construction, the contractor will be responsible for notifying the MDH and retaining a licensed well contractor to abandon the well, if necessary.

3.9 Surface Water Resources

This section describes long-term direct and indirect effects and short-term (construction) direct and indirect effects of the Project on surface water resources, which include wetlands, public waters, surface water quality, and floodplains (see Section 3.17 for cumulative impacts). For the purpose of this section, the term “wetland” is used to describe any regulated aquatic resource. This section includes an overview of the regulatory context and methodology used for the analysis; a review of agency coordination activities; a description of existing surface water resources; anticipated environmental consequences related to surface water resources; and a description of mitigation measures to implement with the Project.

3.9.1 Regulatory Context

Federal, state, and local laws protect surface water resources because of ecological and social functions and values. Impacts on wetlands, floodplains, and other water bodies require permitting from various agencies and regulatory bodies. The required permits vary depending on the feature, size of impact, location of impact, and other factors. Table 3.9-1 lists permitting agencies and corresponding regulatory requirements. The table notes whether they apply to wetlands, public waters/surface water, and/or floodplains. The local jurisdictions associated with this Project include cities, watershed districts,³⁸ and watershed management organizations³⁹ (WMOs). See Exhibit 3.9-1 for city, watershed districts, and WMO boundaries along the proposed light rail alignment. The remainder of this section includes a summary of relevant laws and executive orders, and the associated federal, state, and local agencies and jurisdictions that have regulatory authority over wetlands, public waters and surface water quality, and floodplains.

3.9.1.1 Wetlands

Wetlands are regulated at the federal level by the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbor Act (RHA). The USACE is responsible for issuing a permit for the placement of dredged or fill material into any waters that are regulated by the CWA and/or the RHA. Wetlands are also regulated at the state level by the Minnesota Department of Natural Resources (MnDNR) under MN Rule 6115, and by the Minnesota Board of Water and Soil Resources (MnBWSR) under the Minnesota Wetland Conservation Act (WCA). Designated Local Government Units (LGUs) are responsible for making regulatory decisions regarding impacts to wetlands that are regulated by the WCA. Jurisdictional boundaries for WCA implementation vary based on specific local agreements between LGUs. In addition, some local jurisdictions maintain unique wetland buffer ordinances that become active upon the submittal of a local permit application associated with a construction activity.

3.9.1.2 Public Waters and Surface Water Quality

The regulatory environment for public waters and surface water quality includes federal, state, and local oversight and permitting requirements. Under authority from EPA, MPCA implements federal water quality regulations and manages the list of impaired water bodies within the state, based on the CWA 303[d] list prepared by the EPA. Impaired waters do not meet the water quality standards set by states, territories, or authorized tribes because of elevated levels of pollution or other types of degradation. Along with MPCA,

³⁸ Watershed districts are voluntary units of government created through a local petition process, with broad authorities, including the ability to manage surface and groundwater (MnBWSR, 2015a).

³⁹ WMOs are mandatory organizations based on watershed boundaries governed by a board appointed by the member municipalities and townships, which only have the ability to manage surface water (MnBWSR, 2015b). Each WMO has its own regulatory requirements that are adopted and enforced by member cities.

Minnesota Department of Water Resources (MnDNR) regulates public waters⁴⁰ and requires permits for work affecting the course, current, or cross-section of public waters. Local agencies also implement water quality requirements. Watershed management organizations (WMOs) and watershed districts have implemented stormwater management provisions in their jurisdictions to enforce compliance with the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. MNR040000, as well as the statewide NPDES Construction General Permit No. MN R100001. Detailed permitting requirements are discussed in Table 3.9-1.

TABLE 3.9-1

Summary of Regulatory Agencies with Jurisdiction over Surface Water Resources and Related Requirements

Regulatory Agency	Requirements	Regulated Resource		
		W ^a	P/S ^b	FP ^c
Federal				
FEMA	EO 11988, as amended by EO 13690; NFIA, 42 U.S.C. 4001 et seq.			■
USACE	Section 404 of CWA; Clean Water Rule: Definition of “Waters of the United States”	■		
USEPA	Section 303(d) of CWA; EO 11990	■	■	
USDOT	Order 5650.2 Floodplain Management and Protection			■
State				
MPCA	Section 401 of CWA; MN Rules 7050 & 7090; MN Statute 103G.005; Section 402 of CWA, NPDES Permit Program	■	■	
MnBWSR	MN Rule 8420 (WCA)	■		
MnDNR	MN Rules 6115, 6120, & 8420 (WCA)	■	■	■
MnDOT	Enforce compliance with WCA and encroachment permits.	■	■	
Local Municipalities, Watershed Management Organizations, and Watershed Districts				
City of Eden Prairie	Eden Prairie City Code	■	■	■
City of Minnetonka	Minnetonka Code of Ordinances	■	■	■
City of Hopkins	Hopkins City Code		■	■
City of St. Louis Park	St. Louis Park City Code		■	■
City of Minneapolis	Minneapolis Code of Ordinances	■	■	■
Riley Purgatory Bluff Creek Watershed District	Riley Purgatory Bluff Creek Watershed District Rules		■	■
Minnehaha Creek Watershed District	Minnehaha Creek Watershed District Regulatory Rules	■	■	■
Nine Mile Creek Watershed District	Nine Mile Creek Watershed District Rules	■	■	■
Bassett Creek Watershed Management Commission	Bassett Creek Watershed Management Plan	■	■	■
Mississippi Watershed Management Organization	Mississippi Watershed Management Organization Watershed Management Plan		■	■

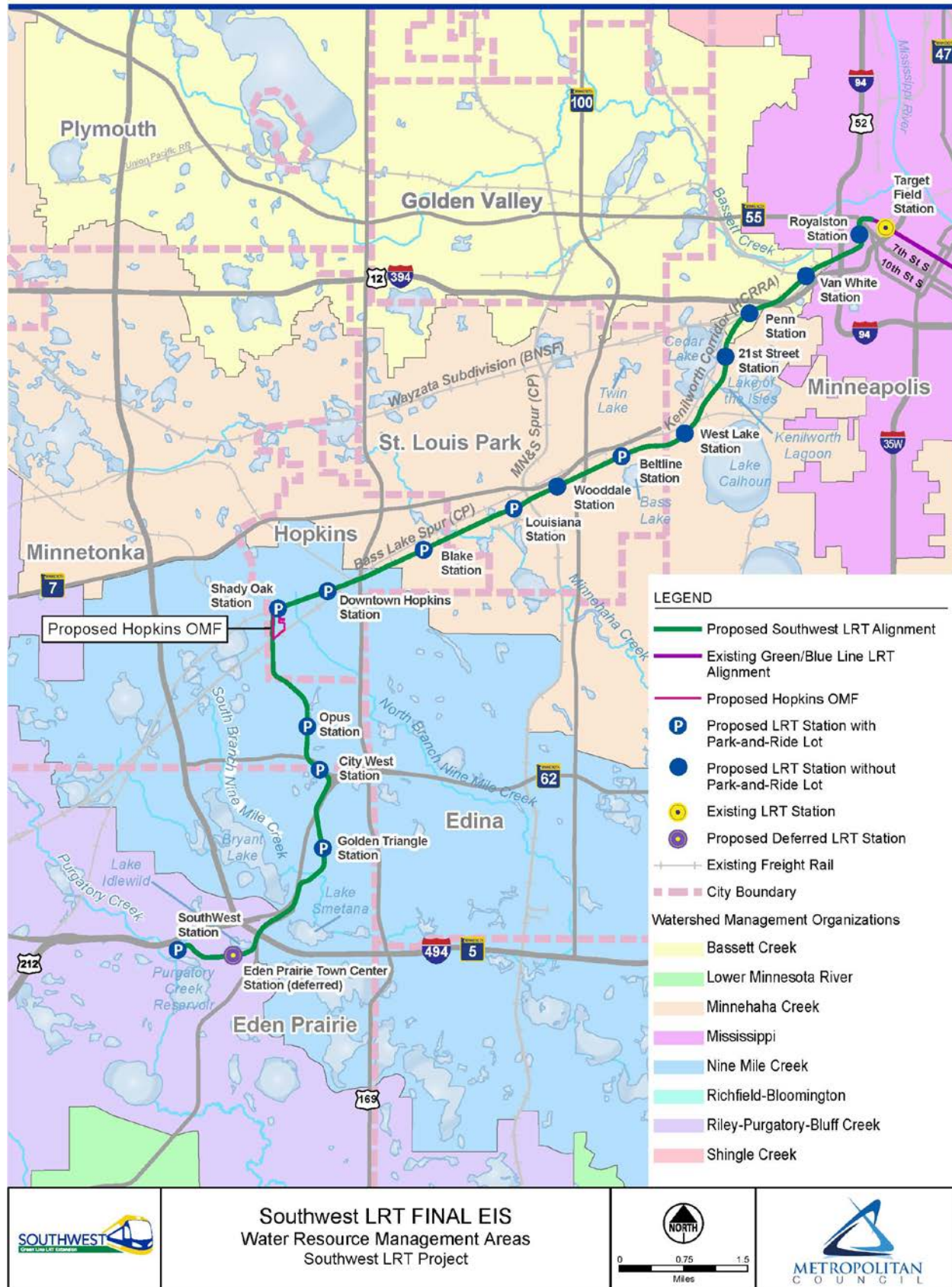
^a Wetlands^b Public Waters and Surface Water Quality^c Floodplains

EO = Executive Order; FEMA = Federal Emergency Management Agency; MN = Minnesota; MnBWSR = Minnesota Board of Water and Soil Resources; MnDOT = Minnesota Department of Transportation; NFIA = National Flood Insurance Act of 1968, as amended; NPDES = National Pollutant Discharge Elimination System; USDOT = United States Department of Transportation. Source: Council, 2015.

⁴⁰ Public waters include public watercourses and public water wetlands that meet the criteria set forth in Minnesota Statutes 103G.005, Subdivision 15, and that are identified on the Public Waters Inventory (PWI) maps and lists authorized by Minnesota Statutes 103G.201.

EXHIBIT 3.9-1

Water Resource Management Areas



3.9.1.3 Floodplains

Floodplains⁴¹ and floodways⁴² are regulated at the federal level by the Federal Emergency Management Agency (FEMA) under the National Flood Insurance Program (NFIP), which is administered by the states. In Minnesota, local jurisdictions are responsible for administering FEMA regulations for activities such as construction, excavation, or deposition of materials in, over, or under waters, which may affect flood stage, floodplain, or floodway boundaries. Such activities generally require mitigation in the form of compensatory volume to offset lost floodplain or floodway storage. Other specific local requirements associated with floodplains can be found in the *Local Governing Agency Floodplain Requirements Summary* (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

Floodplains are also regulated at the federal level by the U.S. Department of Transportation (DOT) Order DOT 5650.2, which prescribes policies and procedures for ensuring proper consideration to avoid and mitigate adverse floodplain impacts in agency actions, planning programs, and budget requests. In addition, Executive Order (EO) 11988, as amended by EO 13690, specifically requires floodplain impacts be considered in the preparation of an EIS for major federal actions. The Federal Flood Risk Management Standards (FFRMS), as defined in EO 13690, require federal agencies to select one of three approaches for establishing the flood elevation and hazard area that will be used for siting, designing, and constructing a given project. Additional details regarding the requirements associated with EO 11988 and EO 13690 can be found within the *Executive Order 11988 Summary and Recommendations* and *Executive Order 13690 Summary and Recommendations*, respectively (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

3.9.2 Methodology

This section describes the methodology and the study areas used to assess impacts on wetlands, public waters, surface water quality, and floodplains. Exhibits 3.9-2 and 3.9-3 illustrate existing wetlands and public waters and impacts. Exhibits 3.9-4 and 3.9-5 illustrate existing floodplains and impacts. A list of and instructions on how to access reports associated with the water resource studies can be found in Appendix C.

3.9.2.1 Wetlands

The wetlands study area includes the Project's proposed limits of disturbance⁴³ (LOD) and an additional area⁴⁴ beyond the LOD. This distance captures improvements included as a part of the Project that could have impacts on wetlands directly or indirectly, and wetlands that could potentially have impacts on the Project directly or indirectly.

⁴¹ EO 11988 defines floodplains as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including, at a minimum, that area subject to a one percent or greater chance of flooding in any given year."

⁴² According to 44 CFR 9.4, "floodway means that portion of the floodplain which is effective in carrying flow, within which this carrying capacity must be preserved and where the flood hazard is generally highest (i.e., where water depths and velocities are the greatest). It is that area which provides for the discharge of the base flood so the cumulative increase in water surface elevation is no more than one foot."

⁴³ The term "limits of disturbance," is defined as the area of land that would experience ground alterations in the short-term due to construction of the Project (e.g., excavation, fill) and that would be occupied in the long-term with Project-related improvements (e.g., light rail alignment, park-and-ride lot). Appendix E includes an illustration of the limits of disturbance.

⁴⁴ The additional area beyond the LOD ranges from zero to 100 feet from either edge of the LOD. The Supplemental Draft EIS used a wetland study area that consisted of the area approximately 100 feet from either edge of the LOD, and the wetland study area has since been refined due to the development and adjustment of the LOD boundaries. The collective boundary of the wetland study area is included in the *Wetland Investigation Report, 2014 Supplemental Wetland Investigation Report*, and the *2015 Supplemental Wetland Investigation Report* (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

EXHIBIT 3.9-2

Delineated Wetlands (Including Streams and Wetlands) Impacts within Eden Prairie, Minnetonka and Hopkins

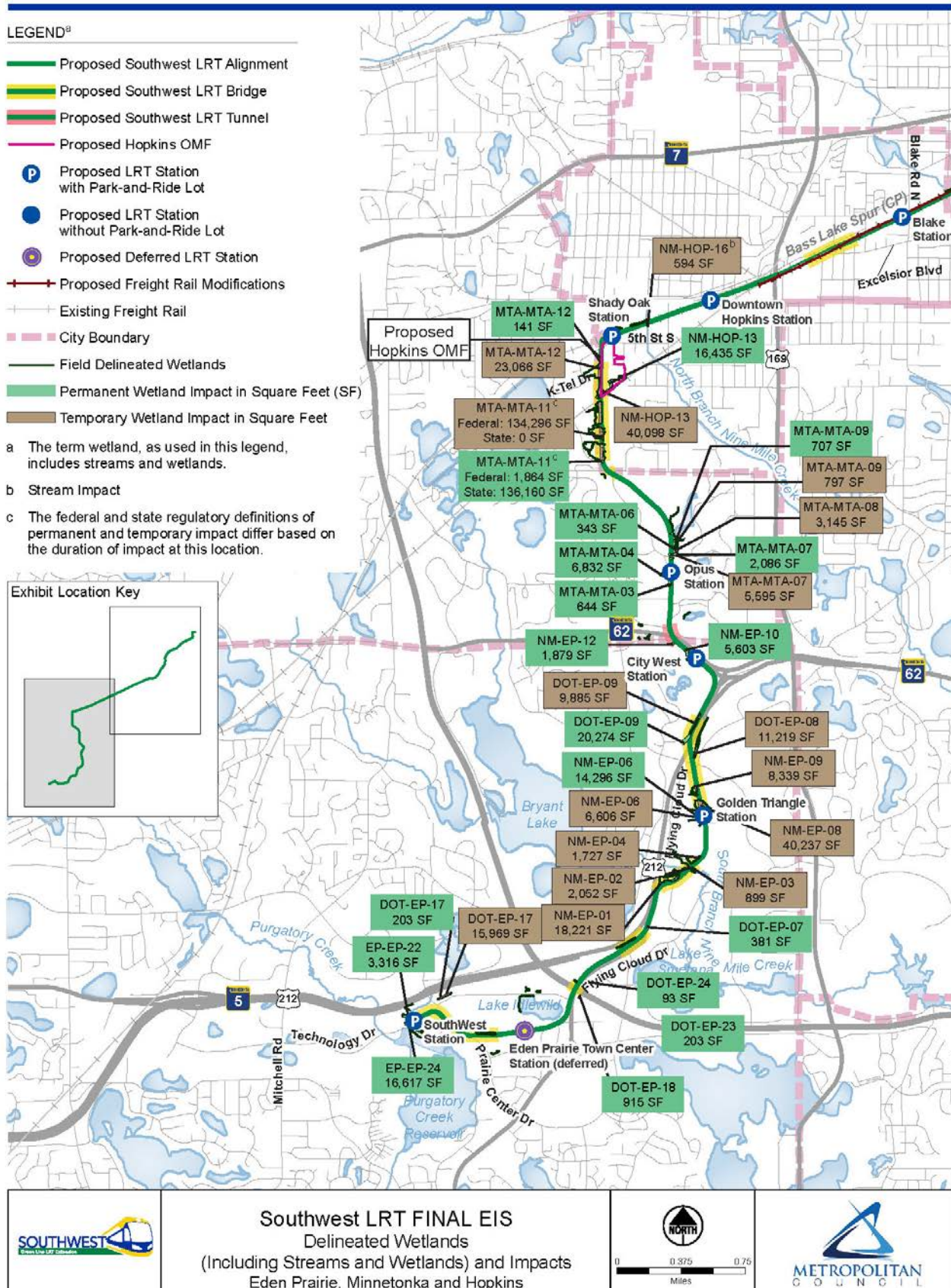


EXHIBIT 3.9-3

Delineated Wetlands (Including Streams and Wetlands) and Impacts within St. Louis Park and Minneapolis



EXHIBIT 3.9-4

Floodplain Impacts within Eden Prairie, Minnetonka, and Hopkins

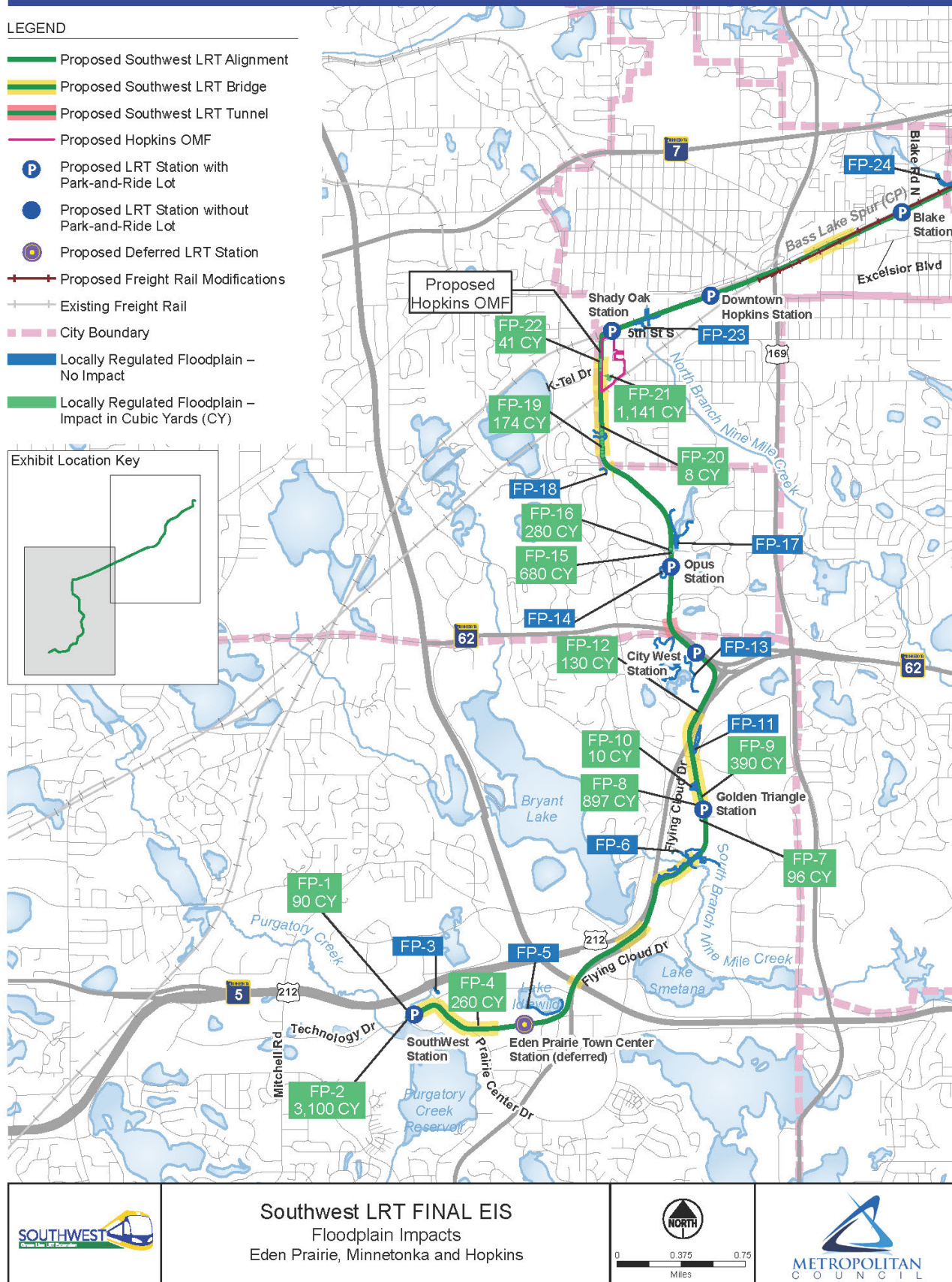
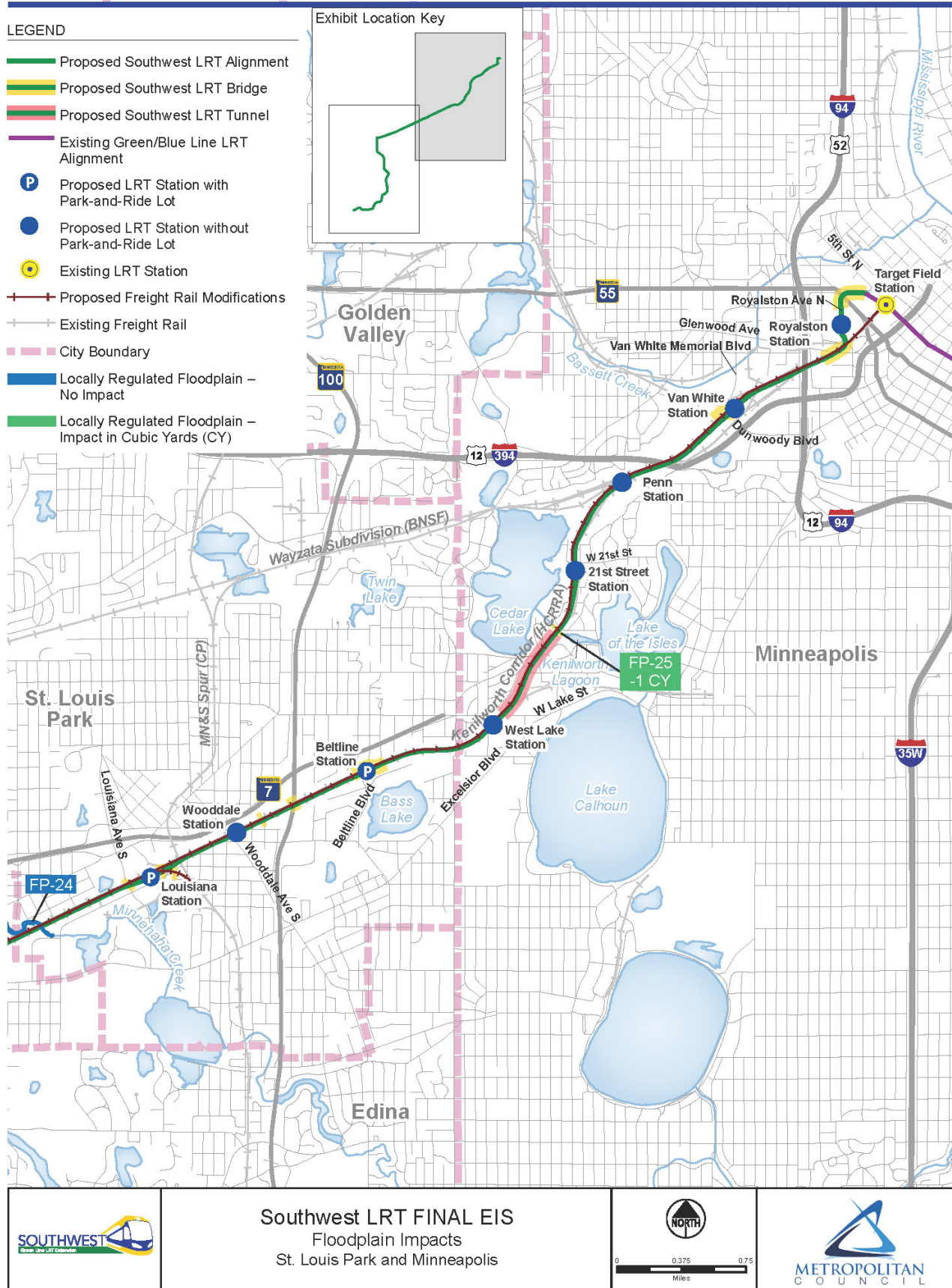


EXHIBIT 3.9-5

Floodplain Impacts within St. Louis Park and Minneapolis



Current spatial data and aerial survey mapping data and other sources identify wetland areas. These other sources include Natural Resource Conservation Service (NRCS) Web Soil Survey maps (U.S. Department of Agriculture-NRCS, 2015), United States Geological Survey quadrangle maps (Minnesota Geospatial Information Office, 2010), the United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) (USFWS, 1974–1988), MnDNR PWI maps (MnDNR, 1983), and LGU wetland inventory maps within the wetlands study area.

Field delineations of wetlands within the wetlands study area were conducted in 2013, 2014, and 2015, using the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987). The results and conclusions of the investigations are documented in the *Wetland Investigation Report*, the *2014 Supplemental Wetland Investigation Report*, and the *2015 Supplemental Wetland Investigation Report* (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

Staff of the LGUs and of the USACE field-reviewed the wetland delineations. The LGUs issue formal approval of wetland boundary and type via Notices of Decision as required by WCA. The USACE issued a preliminary jurisdictional determination⁴⁵ on July 17, 2009 stating that there may be waters and/or wetlands subject to USACE oversight within the wetlands study area. Based on information developed during preliminary design, the USACE issued a second preliminary jurisdictional determination on February 18, 2015 and an approved jurisdictional determination on May 28, 2015. The WCA Notices of Decision and USACE jurisdictional determinations can be found in Appendix N.

The approved wetland boundaries were then incorporated into the design plans and utilized to avoid and minimize impacts to the maximum extent practicable. Unavoidable long-term and short-term impacts were calculated and quantified based on the design and placement of Project elements, as required by federal, state, and local rules.

3.9.2.2 Public Waters and Surface Water Quality

The surface water study area includes one mile on either side of the proposed light rail alignment. Within the surface water study area, public and impaired waters potentially affected by new runoff under the Project were identified. Existing information about surface water quality on the inventoried waters was obtained from the PWI published by the MnDNR. Stormwater impacts were calculated by quantifying the change in impervious surfaces within the Project's limits of disturbance and by assessing the Project's contribution to pollutants to surface water bodies. This analysis is based on the assumption that ballasted track is impervious, because the gradation of the subballast is similar to gravel and tends to impede runoff from infiltrating.⁴⁶ Direct evaluation of these stormwater impacts will be performed during final Engineering and design in order to satisfy federal, state, and local stormwater management regulations discussed above in Section 3.9.1.

3.9.2.3 Floodplains

The floodplains study area is the area within 100 feet of the Project limits of disturbance. This distance captures improvements included as a part of the Project that could have impacts on floodplains, and floodplains that could potentially have impacts on the Project.

⁴⁵ A *jurisdictional determination* is a preliminary finding by the USACE that jurisdictional waters of the United States are either present or absent on a particular site. A preliminary jurisdictional determination is advisory in nature and may not be appealed. An approved jurisdictional determination is an official USACE finding that jurisdictional waters of the United States are either present or absent on a particular site. Approved JDs are valid for five years and can be appealed through the USACE administrative appeal process set out at 33 CFR Part 331. For additional information, see:

<http://www.nab.usace.army.mil/Missions/Regulatory/JurisdictionalDeterminations.aspx>

⁴⁶ Track ballast is material (often crushed stone) used to support the light rail ties and tracks and to facilitate drainage.

The Southwest LRT Project utilized FEMA FIRM maps and FIS data to identify hydraulically connected 100-year floodplains⁴⁷ and 500-year floodplains⁴⁸ in order to establish FFRMS flood hazard elevations, in compliance with EO 13690. Additional details regarding the methods used to establish FFRMS elevations and the results of the analysis are outlined in the *Executive Order 13690 Summary and Recommendations* (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

In addition, the Project used locally approved⁴⁹ methods to quantify and map locally regulated 100-year floodplains that are located within the floodplains study area. Floodplain impacts have been quantified by calculating the fill between the normal and high water levels associated with each local floodplain elevation. In general, impacts on floodplains consist of any design that will result in changes in flow, changes in cross-section, added hydrology, or other hydrologic changes, such as those caused by the addition of fill material or pilings, the addition or removal of culverts, or changes in stream alignments. In situations where the LRT design will result in a net gain of floodplain (i.e., removal of existing bridge pilings), the impact is depicted as negative.

3.9.3 NEPA/404 Merger Process

The analysis completed for this section includes Council and USACE coordination for obtaining permit approval under Section 404 of the CWA. Coordination with the USACE also included FTA and Council participation in a merger process between the NEPA and the CWA Section 404 permitting processes. The NEPA/404 merger process provided the USACE with an opportunity to review and comment on four sequential concurrence points at key milestones during project development: (1) Purpose and Need, (2) Array of Alternatives and Alternatives Carried Forward, (3) Identification of the Selected Alternative, and (4) Design Phase Impact Minimization. The goal of the NEPA/404 merger process is to achieve an orderly, concurrent NEPA/404 review process and to ensure that the Project is likely to succeed in obtaining a Section 404 permit.

The USACE provided concurrence to the first two milestones on December 12, 2012 upon review of the Draft EIS. The USACE indicated the need to re-evaluate the second milestone based on adjustments to the Project design that necessitated a Supplemental Draft EIS. In response, the Council submitted the *NEPA/404 Merger Process – Southwest LRT Concurrence Points Package* to document the design adjustments and provide documentation of all milestones (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]). The USACE reviewed the package and provided concurrence to the second and third milestone on October 16, 2014. As a part of concurrence to the third milestone, the USACE identified the Least Environmentally Damaging and Practicable Alternative from among those that meet the USACE's overall project purpose, and determined that the Project is likely to be permissible under the CWA.

The fourth milestone was documented in the *NEPA/404 Merger Process – Concurrence Point 4* document, which included a comprehensive description of the design minimization efforts for each aquatic resource located within the wetland study area (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]). The USACE provided concurrence to the fourth and final milestone on October 14, 2015. Documentation of USACE concurrence with each milestone can be found in Appendix N.

Upon receiving concurrence to the fourth milestone, the Council submitted the Section 404 CWA permit application to the USACE on November 13, 2015. This application included the following items: (1) applicant

⁴⁷ According to 44 CFR 9.4, a 100-year floodplain (also known as a base floodplain) means the floodplain “for the flood which has a one percent chance of being equaled or exceeded in any given year.”

⁴⁸ According to 44 CFR 9.4, a 500-year floodplain means the floodplain “for the flood which has a 0.2 percent chance of being equaled or exceeded in any given year.”

⁴⁹ Local agencies include the cities of Minneapolis, St. Louis Park, Hopkins, Minnetonka, and Eden Prairie, as well as NMCWD, BCWMC, RPBCWD, and MCWD.

and site location information; (2) a detailed summary of impacted aquatic resources; (3) supporting information for activities not requiring mitigation; (4) a detailed description of the Council's avoidance and minimization efforts; and (5) a summary of the replacement/compensatory mitigation that will be provided for this Project. The public notice period for this permit application is complete and the USACE is currently in the process of completing their review of the application. The Section 404 CWA permit will be issued prior to construction of the Project. A link to this permit application (Council, 2015d) can be found in Appendix D.

3.9.4 Affected Environment

The following sections provide an overview of existing environmental conditions regarding surface water resource features (i.e., wetlands, public waters, surface water quality, and floodplains) in the vicinity of the Project.

3.9.4.1 Wetlands

Commercial, industrial, and residential development characterizes the wetlands study area. Urbanization has had impacts on wetlands. Wetland areas are numerous within the western half of the Project and limited in the eastern half. Exhibits 3.9-2 and 3.9-3 illustrate wetland boundaries within the wetlands study area.

Wetlands occurring within the study area were field-delineated in three phases in 2013, 2014, and 2015. There were 94 areas identified and delineated within the study area that met wetland criteria, 79 of which are regulated as wetlands under the CWA and/or the WCA. Of the 79 wetlands, 40 are regulated by both the WCA and CWA, 16 are regulated only by the WCA, and 23 are regulated only by the CWA. The regulatory status of each wetland was determined by local, state, and federal agencies through formal WCA Notices of Decision and CWA jurisdictional determinations, as referenced in Section 3.9.2.1. Detailed information about each area that meets wetland criteria is included in the *Wetland Investigation Report*, the *2014 Supplemental Wetland Investigation Report*, and the *2015 Supplemental Wetland Investigation Report* (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

3.9.4.2 Public Waters and Surface Water Quality

The surface water study area lies within the Upper Mississippi and Minnesota River basins. The general topography is flat, with many lakes and meandering rivers and creeks, ultimately draining from southwest to northeast toward the Mississippi River. Exhibits 3.9-2 and 3.9-3 illustrate public waters within the surface water study area. The existing drainage infrastructure in the surface water study area consists of ditches for runoff conveyance, with limited storm sewers or culverts located at grade crossings or bridge structures. Table 3.9-2 describes the water bodies within the surface water study area.

Various land uses within the affected watersheds contribute pollutant loading to existing public waters, including municipal, industrial, agricultural, commercial, and residential land uses. Pollutant sources include both point sources and nonpoint sources.⁵⁰ Urban sources of water pollution include impervious surfaces (e.g., paved areas, parking lots, construction sites, rooftops) and pervious areas (e.g., landscaping). In contrast, rural sources include primarily agricultural fields and operations areas.

Minnesota Administrative Rules 5070 et seq. establish beneficial uses and related water quality standards for public waters. The MPCA also identifies the state public waters impairments listed on the CWA 303(d) list. Currently, 12 of the 14 water bodies within the surface water study area are impaired, which means these waters do not meet USEPA water quality standards for one or more constituents. Industrial, commercial, and agricultural activities, including mercury from resource extraction, contribute to the

⁵⁰ Water pollution is the contamination of natural water bodies by industrial, municipal, construction, or other anthropogenic sources of chemical, physical, radioactive, or pathogenic microbial substances, including naturally occurring substances such as sediment. Point sources of water pollution are described by the CWA as "any discernible, confined, and discrete conveyance from which pollutants are or may be discharged." Non-point sources of water pollution affects a water body from sources such as polluted runoff from agricultural areas draining into a river, or wind-borne debris blowing out to sea.

impairments. Various total maximum daily loads (TMDLs) are proposed or approved for water bodies within the surface water study area, as shown in Table 3.9-2.

TABLE 3.9-2

Surface Water Bodies within the Surface Waters Study Area

Water Body	TMDLs (Implementation Date)
Purgatory Creek and Reservoir ^a	None ^b
Lake Idlewild ^a	None ^b
Lake Smetana ^a	Mercury in Fish Tissue (2008)
Bryant Lake ^a	Mercury in Fish Tissue (2008) Nutrient/Eutrophication Biological Indicators (2018)
Nine Mile Creek ^a	Chloride (2010) Fish Bioassessments (2028) Impaired Biota (TBD) Turbidity (TBD)
Minnehaha Creek ^a	Aquatic Macroinvertebrate Bioassessments (2024) Chloride (2015) Fecal Coliform (to be determined [TBD]) Fish Bioassessments (2024) Dissolved Oxygen (2024)
Bass Lake ^a	Mercury in Fish Tissue (2008) Excess Nutrients (2009) Nutrient/Eutrophication Biological Indicators (2017)
Lake Calhoun ^a	Mercury In Fish Tissue (2025) PFOS in Fish Tissue (2022)
Twin Lake ^a	Excess Nutrients (2007) Nutrient/Eutrophication Biological Indicators (2017)
Cedar Lake ^a	Mercury in Fish Tissue (2008, 2025) Excess Nutrients (2012) Nutrient/Eutrophication Biological Indicators (2016)
Kenilworth Lagoon ^{a,c}	Mercury in Fish Tissue (2008) PFOS in Fish Tissue (2022)
Lake of the Isles ^a	Mercury in Fish Tissue (2008) PFOS in Fish Tissue (2022)
Bassett Creek ^a	Chloride (2015) Fecal Coliform (2015) Fish Bioassessments (2016)
Mississippi River ^d (downstream of Bassett Creek)	Mercury in Fish Tissue (2008) Fecal Coliform (2024) PCB in Fish Tissue (2025)

^a Beneficial Use Classes include 2B, 3C, 4A, 4B, 5, and 6, as defined in Minnesota Administrative Rules Section 7050.0470.

^b The 2014 CWA 303(d) list does not include any impairments or TMDLs for this water body.

^c The Kenilworth Lagoon is an unnamed creek that extends from the eastern portion of Cedar Lake to the Lake of the Isles Parkway West bridge. The Kenilworth Lagoon is considered impaired and has been assigned the TMDLs associated with the Lake of the Isles, because the defined extent of the Kenilworth Lagoon overlays a portion of the PWI boundary for the Lake of the Isles.

^d Beneficial Use Classes include 1C, 2Bd, and 3C, as defined in Minnesota Administrative Rules Section 7050.0470.

PCB = polychlorinated biphenyl; PFOS = perfluorooctane sulfonate; TBD = to be determined; TMDL = total maximum daily load

Sources: MPCA, 2014a; MPCA, 2014b; and MPCA, 2014c.

3.9.4.3 Floodplains

There are six hydraulically connected FEMA 100- or 500-year floodplains within the floodplain study area. Data associated with these floodplains were used to establish FFRMS flood hazard elevations. See the *Executive Order 13690 Summary and Recommendations* memorandum for additional information on the FEMA floodplains located within the floodplain study area (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

There are 24 locally regulated floodplains within the floodplains study area. Each locally regulated floodplain, the associated water body(ies), and the applicable regulatory agency(ies) are summarized in Table 3.9-3. The local floodplains are illustrated on Exhibits 3.9-4 and 3.9-5. Floodplains can include floodways, and impacts on floodways are documented as a part of floodplain impacts.⁵¹

TABLE 3.9-3

Locally Regulated Floodplains within the Floodplain Study Area

Locally Regulated Floodplain ID	Associated Water Body(ies)	Applicable Regulatory Agency(ies)
FP-1	Wetland EP-EP-22	RPBCWD, City of Eden Prairie
FP-2	Purgatory Creek; Wetlands EP-EP-15, EP-EP-16, EP-EP-24	RPBCWD, City of Eden Prairie
FP-3	Wetland DOT-EP-17	RPBCWD, City of Eden Prairie, MnDOT
FP-4	Wetland EP-EP-18	RPBCWD, City of Eden Prairie
FP-5	Lake Idlewild; Wetland EP-EP-20	RPBCWD, City of Eden Prairie
FP-6	South Fork of Nine Mile Creek; Wetlands NM-EP-01, NM-EP-02, NM-EP-03, NM-EP-04	NMCWD, City of Eden Prairie
FP-7	Wetland NM-EP-07	NMCWD, City of Eden Prairie
FP-8	Wetland NM-EP-06	NMCWD, City of Eden Prairie
FP-9	Wetland NM-EP-08	NMCWD, City of Eden Prairie
FP-10	Wetland NM-EP-09	NMCWD, City of Eden Prairie
FP-11	Wetland DOT-EP-08	NMCWD, City of Eden Prairie, MnDOT
FP-12	Wetland DOT-EP-09	NMCWD, City of Eden Prairie, MnDOT
FP-13	Wetland NM-EP-12	NMCWD, City of Eden Prairie
FP-14	Wetland MTA-MTA-05	NMCWD, City of Minnetonka
FP-15	Wetland MTA-MTA-06	NMCWD, City of Minnetonka
FP-16	Wetland MTA-MTA-07	NMCWD, City of Minnetonka
FP-17	Wetlands MTA-MTA-08 & MTA-MTA-09	NMCWD, City of Minnetonka
FP-18	Wetland MTA-MTA-10	NMCWD, City of Minnetonka
FP-19	Wetland MTA-MTA-11 (south portion)	NMCWD, City of Minnetonka
FP-20	Wetland MTA-MTA-11 (north & middle portion)	NMCWD, City of Minnetonka
FP-21	Wetland NM-HOP-13	NMCWD, City of Hopkins
FP-22	Wetland MTA-MTA-12	NMCWD, City of Minnetonka
FP-23	North Fork of Nine Mile Creek, Wetland NM-HOP-16	NMCWD, City of Hopkins
FP-24	Minnehaha Creek, Wetland MC-SLP-01	MCWD, City of St. Louis Park
FP-25	Wetland MC-MPL-13	MCWD, City of Minneapolis

RPBCWD= Riley Purgatory Creek Watershed District; MnDOT= Minnesota Department of Transportation; NMCWD= Nine Mile Creek Watershed District; MCWD= Minnehaha Creek Watershed District

Source: Council, 2015.

⁵¹ A floodplain is an area that is susceptible to being inundated by water from any source. Mostly, this is the area adjacent to a river, creek, lake, stream, or other waterway that is subject to flooding when there is a significant runoff event. A floodway is the channel of a river or other watercourse that carries the deepest, fastest water downstream.

3.9.5 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts on wetlands, public waters and surface water quality, and floodplains from the Project.

3.9.5.1 Wetlands

A. Long-term Direct Impacts on Wetlands

Federal and state regulations (described in Section 3.9.1.1) require that projects avoid, minimize, and mitigate any impacts on wetlands, a process referred to as *sequencing*. Under these wetlands regulations, impacts first must be avoided, where possible. If avoidance of impacts is not possible, impacts must be minimized where possible. Long-term impacts that cannot be avoided generally require replacement (mitigation). The Council strives to avoid impacts on wetlands through design solutions, including shifting and/or elevating the transitway alignment and associated civil improvements, adjusting construction work areas, and using retaining walls and ballast curbs to minimize the limits of disturbance. The long-term direct wetland impacts included in this section were determined to be unavoidable. Per regulatory requirements, the CWA 404 permit application includes a discussion on two alignment alternatives that would completely avoid wetland impacts, neither of which would meet the Project's purpose and need, as well as a comprehensive description of the design minimization efforts proposed for aquatic resources located within the wetland study area. A link to this permit application (Council, 2015d) can be found in Appendix D.

As summarized in Table 3.9-4, implementation of the Project will result in long-term direct impacts on 20 wetlands, 10 of which are regulated by both the WCA and CWA, three of which are regulated only by the WCA, and seven of which are regulated only by the CWA (illustrated on Exhibits 3.9-2 and 3.9-3). Each of the wetland basins with long-term direct impacts associated with the Project are described in the *Wetland Investigation Report*, the *2014 Supplemental Wetland Investigation Report*, and the *2015 Supplemental Wetland Investigation Report* (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

B. Long-term Indirect Impacts on Wetlands

Light rail lines can advance the timing and increase the intensity of development, within the limits allowed by local comprehensive plans, particularly surrounding proposed station areas. Long-term indirect impacts to wetlands may occur if new development occurs within the proposed station areas. Future development will be subject to the laws and regulations in place at the time of development.

C. Short-term Impacts on Wetlands

For the purposes of this project, an impact on a wetland is defined as "short-term" when the physical characteristics of a wetland are affected by construction activities (e.g. temporary fill or vegetation disturbance) and restored to pre-project conditions sufficient to restore pre-project functions. Short-term impacts do not require replacement (mitigation), unless specified by a regulatory agency on a case-by-case basis. The USACE has indicated that mitigation will be required for CWA regulated short-term wetland impacts lasting longer than 180 days.

The Project will have short-term (temporary) impacts on 18 wetlands, 13 of which are regulated by both the WCA and CWA and five of which are regulated only by the CWA, as listed in Table 3.9-5. Each of the wetland basins with short-term impacts associated with the Project is described in the *Wetland Investigation Report*, the *2014 Supplemental Wetland Investigation Report*, and the *2015 Supplemental Wetland Investigation Report* (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

Impacts due to access requirements will be limited because much of the new light rail alignment will be built adjacent to existing roadways, providing direct access to the construction site. Some construction activities, such as grading and equipment staging, will result in the loss or disturbance of soils and vegetation, which will increase the likelihood of erosion and sedimentation in surface water resources located in the wetlands study area.

TABLE 3.9-4

Long-term Direct Wetland Impacts (Including Streams and Wetlands) by Resource Type

Resource I.D.	Resource Size (acres)	WCA Regulated Long-term Direct Impact ^a (square feet)	CWA Regulated Long-term Direct Impact ^b (square feet)	Resource Type ^c
DOT-EP-07	0.01	0 ^d	381	Type 2 (fresh wet meadow)
DOT-EP-09	0.70	0 ^d	20,274	Type 3 (shallow marsh)
DOT-EP-17	2.21	203	203	Type 2/5 (fresh wet meadow/shallow open water)
DOT-EP-18	0.10	0 ^d	915	Type 3 (shallow marsh)
DOT-EP-23	0.05	0 ^d	203	Type 1 (seasonally flooded basin)
DOT-EP-24	0.02	0 ^d	93	Type 1 (seasonally flooded basin)
EP-EP-22	0.20	3,316	3,316	Type 3 (shallow marsh)
EP-EP-24 ^e	0.38	16,617	16,617	Type 5 (shallow open water)
NM-EP-06	4.02	14,296	14,296	Type 3/6 (shallow marsh/scrub carr)
NM-EP-10	0.13	5,603	0 ^d	Type 3 (shallow marsh)
NM-EP-12	3.40	1,879	1,879	Type 3/6 (shallow marsh/scrub carr)
NM-HOP-13	2.67	16,435	16,435	Type 1/3/5/6 (seasonally flooded basin/shallow marsh/shallow open water/scrub carr)
MTA-MTA-03	0.01	644	0 ^d	Type 1 (seasonally flooded basin)
MTA-MTA-04	0.16	6,832	0 ^d	Type 1 (seasonally flooded basin)
MTA-MTA-06	0.01	0 ^d	343	Type 1 (seasonally flooded basin)
MTA-MTA-07 ^{e,f}	0.18	2,086	2,086	Type 3 (shallow marsh)
MTA-MTA-09 ^e	36.20	707	707	Type 3 (shallow marsh)
MTA-MTA-11	11.79	136,160	1,864	Type 2/3/5 6/7 (fresh wet meadow/shallow marsh/shallow open water/scrub carr/hardwood swamp)
MTA-MTA-12	2.70	141	141	Type 5 (shallow open water)
Wetland Subtotal	64.94	204,919	79,753	
MC-MPL-13 ^{e,g} (Kenilworth Channel)	N/A	0 ^d	129 (20 linear feet)	Type 90 (channel)
Stream Subtotal	N/A	0^d	129 (20 linear feet)	
Total	64.94	204,919 (4.70 acres)	79,882 (1.83 acres)	

^a Impacts to WCA regulated wetlands that will not be fully restored within six months.^b Impacts to CWA regulated wetlands that will not be fully restored.^c Based on wetland types defined in USFWS Circular 39 System (Shaw and Fredine, 1956).^d Impact quantity is zero because the resource is not regulated by the applicable law listed in the column heading.^e Resource is associated with a public watercourse or public water wetland.^f Impact is partially due to an access road associated with a proposed TPSS. See Sheet 7 of the preliminary engineering plans located in Appendix E for a detailed view of the TPSS layout and the associated wetland impact.^g Resource is a stream and is associated with a state listed 303(d) impaired waterbody, as identified in Table 3.9-2. "Resource Size" is not applicable (N/A) for linear features.

Note: Quantities are based on the Project's preliminary engineering plans. The final impact quantities will be included in an addendum to the CWA Section 404 permit application and the state/local wetland permit applications.

Source: Section 404 CWA permit application (a link to this application [Council, 2015d] can be found in Appendix D).

TABLE 3.9-5

Short-term Wetland Impacts (Including Streams and Wetlands) by Resource Type

Resource ID	Resource Size (acres)	WCA Regulated Short-term Impact ^a (square feet)	CWA Regulated Short-term Impact ^b (square feet)	Resource Type ^c
DOT-EP-08	0.84	0 ^d	11,219	Type 3 (shallow marsh)
DOT-EP-09	0.70	0 ^d	9,885	Type 3 (shallow marsh)
DOT-EP-17	2.21	15,969	15,969	Type 2/5 (fresh wet meadow/shallow open water)
NM-EP-01	1.81	18,221	18,221	Type 5/6 (shallow open water/scrub carr)
NM-EP-02 ^e (South Fork of Nine Mile Creek)	6.22	2,052	2,052	Type 3/6 (shallow marsh/scrub carr wetland)
NM-EP-03 ^e (South Fork of Nine Mile Creek)	2.16	899	899	Type 3 (shallow marsh)
NM-EP-04	1.18	1,727	1,727	Type 7 (hardwood swamp)
NM-EP-06	4.02	6,606	6,606	Type 3/6 (shallow marsh/scrub carr)
NM-EP-08	2.25	40,237	40,237	Type 3/6 (shallow marsh/scrub carr)
NM-EP-09	0.66	8,339	8,339	Type 3 (shallow marsh)
NM-HOP-13	2.67	40,098	40,098	Type 1/3/5/6 (seasonally flooded basin/shallow marsh/shallow open water/scrub carr)
MTA-MTA-07 ^{e,f}	0.18	5,595	5,595	Type 3 (shallow marsh)
MTA-MTA-08 ^e	0.34	3,145	3,145	Type 3 (shallow marsh)
MTA-MTA-09 ^e	36.20	797	797	Type 3 (shallow marsh)
MTA-MTA-11	11.79	0 ^d	134,296	Type 2/3/5 6/7 (fresh wet meadow/shallow marsh/shallow open water/scrub carr/hardwood swamp)
MTA-MTA-12	2.70	23,066	23,066	Type 5 (shallow open water)
Wetland Subtotal	75.93	166,751	322,151	
NM-HOP-16 ^{e,g} (North Fork of Nine Mile Creek)	N/A	0 ^d	594 (60 linear feet)	Type 90 (channel)
MC-MPL-13 ^{e,g} (Kenilworth Channel)	N/A	0 ^d	5,244 (100 linear feet)	Type 90 (channel)
Stream Subtotal	N/A	0^d	5,838 (160 linear feet)	
Total	75.93	166,751 (3.83 acres)	327,989 (7.53 acres)	

^a Impacts to WCA regulated wetlands that will be fully restored within six months.^b Impacts to CWA regulated wetlands that will be fully restored.^c USFWS Circular 39 System (Shaw and Fredine, 1956).^d Impact quantity is zero because the resource is not regulated by the applicable law listed in the column heading.^e Resource is associated with a public watercourse or public water wetland.^f Impact is partially due to an access road associated with a proposed TPSS. See Sheet 7 of the preliminary engineering plans located in Appendix E for a detailed view of the TPSS layout and the associated wetland impact.^g Resource is a stream and is associated with a state listed 303(d) impaired waterbody, as identified in Table 3.9-2. "Resource Size" is not applicable (N/A) for linear features.

Note: Quantities are based on the Project's preliminary engineering plans. The final impact quantities will be included in an addendum to the CWA Section 404 permit application and the state/local wetland permit applications.

Sources: Section 404 CWA permit application (a link to this application [Council, 2015d] can be found in Appendix D).

The Southwest LRT Project has avoided and minimized short-term impacts to wetlands through design adjustments, including shifting and/or elevating the alignment and adjusting construction work areas. In-stream construction will be avoided when possible; temporary portable dams or cofferdams will be installed as required when in-stream construction cannot be avoided. Additional details regarding construction staging areas and the minimization of short-term wetland impacts can be found in the Section 404 CWA permit application. A link to this permit application (Council, 2015d) can be found in Appendix D.

In addition, the implementation of appropriate wildlife-friendly (e.g. natural materials, no welded webbing) construction BMPs will help to avoid or minimize erosion and sedimentation impacts and protect water quality when needed. Examples of surface water resource BMPs include the following:

- Minimizing the amount of cleared area at a construction site
- Stabilizing construction entrances and haul roads
- Washing truck tires at construction entrances, as necessary
- Building silt fences downslope from exposed soil
- Protecting catch basins from sediment
- Containing and controlling concrete and hazardous materials onsite
- Installing temporary ditches to route runoff around or through construction sites, with straw bales or rock check dams strategically located to slow and settle runoff
- Providing temporary plastic or mulch to cover soil stockpiles and exposed soil
- Using straw wattles to reduce the length of unbroken slopes and minimize runoff concentration
- Using temporary erosion control blankets or mulch on exposed steep slopes to minimize erosion before vegetation is established
- Building temporary sedimentation ponds to remove solids from concentrated runoff and groundwater pumping before being discharged
- Conducting vehicle fueling and maintenance activities no closer than 100 feet from a wetland

3.9.5.2 Public Waters and Surface Water Quality

A. Long-term Direct Impacts on Public Waters and Surface Water Quality

Long-term direct impacts will generally result from conversion of undeveloped land and operations and maintenance of the Project during its life. The following bullets summarize long-term direct impacts on public waters and surface water quality. For additional discussion of long-term direct impacts see *Southwest LRT Water Quality Report* (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

- The Project will increase pollutant-generating impervious surfaces by approximately 39.9 acres, as shown in Table 3.9-6.⁵² These impervious surfaces, such as new park-and-ride lots, roadway, light rail alignment, and freight rail improvements will capture pollutants in their runoff. However, because the new impervious surfaces will represent a small overall increase in the total impervious surface area in each watershed and the Council will adhere to applicable stormwater management regulations (such as the installation of water treatment facilities), adverse impacts to public waters and surface water quality resulting from new impervious surfaces are unlikely to occur. In particular, the Project will not contribute to an increase in the pollutants of concern identified in Table 3.9-2.

⁵² If the Eden Prairie Town Center Station is not constructed by 2040, the total impervious area would be 199.7 acres, or approximately 0.33 acres less than the Project as completed with this station completely built.

TABLE 3.9-6

Project Impacts to Pollutant-Generating Impervious Surface

Existing Impervious Areas	Proposed Impervious Areas	New Impervious Areas
160.1 acres	200.0 acres	39.9 acres

Sources: Southwest LRT Water Quality Technical Report (located in the Surface Water Resources Evaluation Supporting Documentation Technical Memorandum [see Appendix C for instructions on how to access supporting documentation]).

- The Project will cross over five water bodies as follows: Nine Mile Creek (North Fork), Nine Mile Creek (South Fork), Minnehaha Creek, Kenilworth Lagoon, and Bassett Creek.⁵³
- The proposed Hopkins Operations and Maintenance Facility (OMF) site will require fill into an unidentified ditch that connects two nearby wetlands. The Project will maintain the existing ditch and construct a new culvert between the two wetlands.

Project Design Features to Meet Stormwater Management Requirements

To protect surface water quality, the Project will implement various design features that meet storm water regulatory requirements, including (1) minimizing or eliminating pollutant sources and (2) implementing structural and non-structural BMPs to treat and control runoff from both developed and redeveloped areas. The Project will implement the following criteria and design features for runoff rate and volume control:

- Conserve natural areas and minimize the extent of disturbed areas.
- Implement pollutant source reduction measures.
- Provide landscape and soil-based BMPs that promote infiltration and stormwater retention onsite.
- Develop a stormwater pollution prevention plan (SWPPP) prior to construction.
- Deploy and maintain construction site BMPs during construction.
- Provide stormwater management features that control peak flow rates and volumes.
- Incorporate stormwater treatment BMPs wherever feasible at LRT facilities to maximize infiltration of runoff onsite; examples include biofiltration swales and trackside infiltration basins.
- Where infiltration is not feasible within the corridor, the Project will evaluate and implement other BMPs based on the sequence of compliance alternatives prescribed by each watershed district's and WMO's stormwater management ordinance discussed in *Local and State Governing Agency Stormwater Requirements Summary* (located in *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).
- Locate all constructed stormwater BMPs outside of natural wetlands and streams.
- The Project will obtain an Individual Section 404 Permit from the USACE and a CWA Section 401 Water Quality Certification from the MPCA, and will comply with the stormwater conditions of those permits.

For additional discussion of design features see *Southwest LRT Water Quality Report* (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

B. Long-term Indirect Impacts on Public Waters and Surface Water Quality

There is potential for increased development and redevelopment in areas surrounding proposed light rail stations because of improved transit access. To the extent that the Project increases development and redevelopment intensity, long-term indirect impacts will result as commercial, transportation, and industrial

⁵³ The five crossings will not alter the cross-sections or hydrological characteristics, or obstruct flow patterns within these water bodies. Work completed within the water bodies will require permitting and coordination with federal, state, and local regulatory agencies.

activities in the Project's vicinity increase new point and non-point sources of water pollutants. Water quality impacts can include:

- Increased export of pollutants from impervious surfaces and compacted soil
- Decreased pollutant filtration
- Increased water temperatures as a result of riparian vegetation removal
- Export of pollutants from motor vehicles using park-and-ride lots and other associated infrastructure

C. Short-term Impacts on Public Waters and Surface Water Quality

Short-term impacts include increased rates and volumes of sediment-laden runoff during excavation, accidental spills and leaks from construction vehicles and equipment, and removal of riparian vegetation. Short-term sediment and erosion impacts to public waters and surface water quality will occur near stream crossings, where slopes are greater and construction activities occur closer to the public water, and where controls are more difficult to implement and maintain. The likelihood of spills affecting surface water bodies also is greatest in these areas. Detailed short term impacts related to specific LRT design features are presented in the *Southwest LRT Water Quality Report* (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]). These impacts are summarized below:

- Construction may lead to temporary changes in grades and drainage patterns.
- Construction over public waters may directly contribute pollutants.
- Construction of LRT facilities (stations, parking lots, and park-and-ride facilities) that involve large areas of clearing and grubbing may expose soil to stormwater and potentially erosive conditions.
- Construction materials and stockpiles could be exposed to stormwater.

To address these temporary impacts, the Project will develop an SWPPP that complies with the Construction General Permit. The SWPPP will be developed prior to construction and will identify source control and wildlife-friendly erosion and sediment control BMPs required for the Project. The SWPPP will also provide details on construction techniques required to minimize pollutant loadings directly to surface waters, such as using coffer dams for in-stream construction.

3.9.5.3 Floodplains

A. Long-term Direct Impacts on Floodplains

The Project has been designed in compliance with EOs 11988 and 13690; therefore, floodplain impacts have been minimized to the greatest practicable extent and tracks and structures associated with the Project will be built above the applicable FFRMS elevations. Details regarding impact minimization measures and the specific Project design elevations and associated FFRMS elevations can be found in the *Executive Order 13690 Summary and Recommendations* and *Executive Order 11988 Summary and Recommendations* (located in the *Surface Water Resources Evaluation Supporting Documentation Technical Memorandum* [see Appendix C for instructions on how to access supporting documentation]).

Construction of the Project will result in 7,296 cubic yards of long-term floodplain impacts, as summarized in Table 3.9-7 and illustrated on Exhibits 3.9-4 and 3.9-5. The Project will include balanced cut and fill at any affected floodplain locations, which accounts for the fill that will occur at each location. Where it is not feasible to meet this requirement, a variance may be needed from the applicable regulatory agency. If the Project will result in a net gain of floodplain, the impact is depicted as negative.

B. Long-term Indirect Impacts on Floodplains

Light rail lines can advance the timing and increase the intensity of development, within the limits allowed by local comprehensive plans, particularly surrounding proposed station areas. Long-term indirect impacts to floodplains may occur if new development occurs within the proposed station areas. Future development will be subject to the laws and regulations in place at the time of development.

TABLE 3.9-7

Long-term Area of Floodplains Filled, by Floodplain ID

Locally Regulated Floodplain ID	Associated Water Body(ies)	Applicable Regulatory Agency(ies)	Area of Floodplain Fill ^a (cubic yards)
FP-1	Wetland EP-EP-22	RPBCWD, City of Eden Prairie	90
FP-2	Purgatory Creek, Wetlands EP-EP-15, EP-EP-16, EP-EP-24	RPBCWD, City of Eden Prairie	3,100
FP-4	Wetland EP-EP-18	RPBCWD, City of Eden Prairie	260
FP-7	Wetland NM-EP-07	NMCWD, City of Eden Prairie	96
FP-8	Wetland NM-EP-06	NMCWD, City of Eden Prairie	897
FP-9	Wetland NM-EP-08	NMCWD, City of Eden Prairie	390
FP-10	Wetland NM-EP-09	NMCWD, City of Eden Prairie	10
FP-12	Wetland DOT-EP-09	NMCWD, City of Eden Prairie, MnDOT	130
FP-15	Wetland MTA-MTA-06	NMCWD, City of Minnetonka	680
FP-16	Wetland MTA-MTA-07	NMCWD, City of Minnetonka	280
FP-19	Wetland MTA-MTA-11 (south portion)	NMCWD, City of Minnetonka	174
FP-20	Wetland MTA-MTA-11 (north & middle portion)	NMCWD, City of Minnetonka	8
FP-21	Wetland NM-HOP-13	NMCWD, City of Hopkins	1,141
FP-22	Wetland MTA-MTA-12	NMCWD, City of Minnetonka	41
FP-25	Wetland MC-MPL-13 (Kenilworth Channel)	MCWD, City of Minneapolis	(1) ^b
Total			7,296

^a Quantities are based on the Project's preliminary engineering plans. The final impact quantities will be included in the local floodplain permit applications.

^b Impact is negative because the volume of existing timber piers to be removed from this location exceeds volume of proposed piers.

Note: MCWD= Minnehaha Creek Watershed District; MnDOT= Minnesota Department of Transportation; NMCWD= Nine Mile Creek Watershed District; RPBCWD= Riley Purgatory Bluff Creek Watershed District.

Source: Council, 2015.

The Project will develop appropriate plans and obtain applicable permits for floodplains, as well as implement BMPs to minimize long-term direct impacts.

C. Short-term Impacts on Floodplains

The Project will incur some short-term impacts on floodplains, because of the various construction activities associated with the Project. Temporary workspaces and access roads will require temporary fill within floodplains. Some construction activities will result in the loss or disturbance of soils and vegetation, which will increase the likelihood of temporary erosion and sedimentation in floodplains. The Project will develop appropriate plans and obtain applicable permits for floodplains, as well as implement appropriate wildlife-friendly BMPs to avoid erosion and sedimentation impacts to floodplains during construction.

3.9.6 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term surface water resource impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Sections 3.9.5.1, 3.9.5.2, and 3.9.5.3 for additional information on the identified surface water resource impacts, avoidance measures, and BMPs, respectively).

3.9.6.1 Wetlands

A. Long-term Mitigation Measures

Impact. Permanent wetland fill.

Mitigation. The Project will require coordination and permitting from local, state, and federal water resource agencies. The Council coordinated with the Project's appointed WCA Technical Evaluation

Panel, as defined in Section 9.3, regarding mitigation strategies prior to the submittal of the WCA and CWA Section 404 permit applications. Analysis of preliminary mitigation strategies included establishing project-specific permittee-responsible mitigation sites and purchasing wetland mitigation bank credits. Through a series of coordination meetings with the Technical Evaluation Panel prior to the submittal of permit applications, the Council identified purchasing bank credits as the preferred strategy that will meet federal, state, and local mitigation requirements.

The compensatory mitigation ratios for the loss of wetland function and value is dependent on the location, type, and functional value of the wetland being affected and the type and duration of impact. The Council will purchase the required amount of wetland mitigation bank credits based on the long-term impacts and associated replacement ratios identified in the WCA and CWA Section 404 permit applications. Wetland mitigation banks credits will be purchased from established and approved wetland bank accounts located in watershed 33/USACE bank service area 9 (Minnesota River-Shakopee), in accordance with the applicable USACE, WCA, and LGU siting priority requirements, prior to the construction of the Project. The USACE has indicated that the Project will not be required to mitigate for permanent impacts that do not alter the cross-section or hydrological characteristics, or obstruct flow patterns within streams that are regulated under Section 404 of the CWA.

B. Short-term Mitigation Measures

Impact. Temporary loss of wetland vegetation and/or hydrology.

Mitigation. Wetland areas affected on a temporary basis during construction will be restored to existing grade, hydrology (to existing conditions when applicable), and reseeded with an appropriate native wetland species seed mix, as required by the WCA and CWA. The restoration details associated with each short-term wetland impact will be identified in the WCA and CWA permit applications. The Project will purchase wetland mitigation bank credits for CWA regulated short-term impacts lasting longer than 180 days.

3.9.6.2 Public Waters and Surface Water Quality

A. Long-term Mitigation Measures

Impact. Long-term degradation of surface water quality.

Mitigation. Long-term stormwater runoff will be directed into stormwater management facilities created as part of the Project as approved by local jurisdictions and through final permitting. These facilities will be designed to provide stormwater treatment in compliance with NPDES requirements.

B. Short-term Mitigation Measures

Impact. Short-term degradation of surface water quality.

Mitigation. Short-term (construction) stormwater runoff will be directed into temporary stormwater management facilities created as part of the Project. These facilities will be designed to provide stormwater treatment in compliance with NPDES requirements.

3.9.6.3 Floodplains

A. Long-term Mitigation Measures

Impact. Permanent floodplain fill.

Mitigation. Impacts to locally regulated floodplains will be mitigated by appropriate compensatory storage⁵⁴ within or adjacent to the affected water body, as summarized in Table 3.9-8. The Project will utilize the following methods to create compensatory storage: excavation of upland adjacent to existing floodplain, excavation of existing floodplain, and construction of stormwater BMPs with the capacity for storage. Final design will include the appropriate compensatory storage required by

⁵⁴ Local permitting authorities require compensatory storage at a ratio of 1:1 within +/- one foot of the floodplain impacts within the same water body.

applicable local agencies. Where it is not feasible to meet this requirement, a variance will be requested from the applicable regulatory agency and the appropriate documentation provided to justify the variance.

TABLE 3.9-8

Floodplain Mitigation by Floodplain ID

Locally Regulated Floodplain ID	Associated Water Body(ies)	Applicable Regulatory Agency(ies)	Area of Floodplain Mitigation (cubic yards)
FP-1	Wetland EP-EP-22	RPBCWD, City of Eden Prairie	493
FP-2	Purgatory Creek, Wetlands EP-EP-15, EP-EP-16, EP-EP-24	RPBCWD, City of Eden Prairie	492
FP-4	Wetland EP-EP-18	RPBCWD, City of Eden Prairie	280
FP-7	Wetland NM-EP-07	NMCWD, City of Eden Prairie	TBD ^a
FP-8/FP-9	Wetland NM-EP-06/NM-EP-08	NMCWD, City of Eden Prairie	1,409
FP-10	Wetland NM-EP-09	NMCWD, City of Eden Prairie	12
FP-12	Wetland DOT-EP-09	NMCWD, City of Eden Prairie, MnDOT	2,533
FP-15/FP-16	Wetland MTA-MTA-06/MTA-MTA-07	NMCWD, City of Minnetonka	960
FP-19	Wetland MTA-MTA-11 (south portion)	NMCWD, City of Minnetonka	175
FP-20	Wetland MTA-MTA-11 (north and middle portion)	NMCWD, City of Minnetonka	8
FP-21	Wetland NM-HOP-13	NMCWD, City of Hopkins	1,546
FP-22	Wetland MTA-MTA-12	NMCWD, City of Minnetonka	86
Total			7,994

^a To be determined (TBD) indicates that mitigation at this floodplain is under development. The final mitigation quantities will be included in the local floodplain permit applications.

Source: Council, 2015.

B. Short-term Mitigation Measures

Impact. Temporary floodplain disturbance and/or fill.

Mitigation. Short-term floodplain fill placed during construction will be removed and elevations restored to existing conditions resulting in a no net-loss of flood storage volume.

3.10 Ecosystems

This section describes long-term direct and indirect effects and the short-term (construction) direct and indirect effects of the Project on ecosystems (see Section 3.17 for cumulative impacts). Within this Final EIS, ecosystems include threatened and endangered species, habitat, and migratory birds. This section includes an overview of the regulatory context and methodology used for the analysis, a description of existing ecosystems conditions, anticipated environmental consequences related to ecosystems, and a description of mitigation measures to implement with the Project.

3.10.1 Regulatory Context and Methodology

This section includes a summary of relevant laws and executive orders, an overview of the methodology, and descriptions of the study areas for the analyses completed as part of the ecosystems evaluation. In summary, the following study areas are used throughout this section, as appropriate, to account for regulatory review standards and availability of data:

- USFWS study area: defined as Hennepin County; used in Threatened and Endangered Species analysis

- MnDNR study area: defined as the area that extends approximately one mile around the Project's Limit of Disturbance (LOD)⁵⁵; used in Threatened and Endangered Species analysis
- Habitat study area: defined as the area that extends 100 feet around the Project's LOD; used in Habitat analysis
- Migratory bird study area: defined as Hennepin County; used in Migratory Bird analysis

3.10.1.1 Threatened and Endangered Species

The primary federal law protecting threatened and endangered species is the Endangered Species Act (ESA) of 1973 (16 U.S.C. §§ 1531-1544). This law requires that all federal agencies consider and avoid, if possible, adverse impacts to federally listed rare, threatened and endangered species or their critical habitats, which may result from their direct, regulatory, or funding actions. Under 16 U.S.C. §§ 1536 Section 7 of the ESA, federal agencies are required to consult with the USFWS and/or the National Marine Fisheries Service (NMFS) (jointly referred to as the Services⁵⁶), to ensure that FTA is not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat.

Section 7 requirements vary based on the level of effect a federal action is anticipated to have on the federally listed species and designated critical habitat identified at the location of that action. For an action that will have "no-effect," the applicant will submit documentation to USFWS and/or NMFS stating that the proposed action, including its interrelated and interdependent actions, will not affect (i.e., influence or bring about any change to) listed species or designated critical habitat, either directly or indirectly. For an action that "may affect, but is not likely to adversely affect" a species or their habitat, informal consultation is conducted, which results in a concurrence letter from the Services. For an action that is "likely to adversely affect" a species or their habitat, formal consultation is conducted with the applicable agency(ies). The outcome of formal consultation is a Biological Opinion, which may include an incidental take permit if the applicant is allowed to proceed with the action.⁵⁷

The USFWS catalogues federally listed threatened and endangered species by occurrence within a given county. The Council reviewed the USFWS Endangered Species Program website⁵⁸ (USFWS, 2015) to identify the federally listed threatened or endangered species and critical habitats occurring within the USFWS study area, which is defined as within Hennepin County. The identified species and critical habitat were assessed for impacts due to the Project. The FTA then made a determination of this Project's level of effect on the identified species and habitat and requested concurrence from USFWS.

Minnesota's endangered species law (Minnesota Statutes 84.0895) and associated rules (Minnesota Rules 6212.1800-2300) regulate the taking, importation, transportation, and sale of state-listed threatened, endangered, or special concern species. MnDNR administers the state law and manages the listing of state threatened, endangered, and special concern species.

MnDNR assesses potential impacts to state-listed species within approximately one mile of a given project. As requested by the Project on December 11, 2013 and June 12, 2015, MnDNR performed a query on the Natural Heritage Information System (NHIS) database (MnDNR, 2015c) to identify potential element occurrences⁵⁹ of state-listed species within the MnDNR study area, which is defined as the area that extends approximately one mile around the Project's limits of disturbance. In addition, the Council executed a license

⁵⁵ The Project's limits of disturbance is depicted on the preliminary engineering plans located in Appendix E.

⁵⁶ The USFWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of the NMFS are mainly marine wildlife such as whales and anadromous fish such as salmon.

⁵⁷ For a detailed discussion regarding USFWS formal and informal consultation processes under Section 7 of the ESA, see <http://www.fws.gov/Midwest/endangered/section7/index.html>.

⁵⁸ See <http://www.fws.gov/endangered/>.

⁵⁹ An element occurrence is defined as an area of land and/or water in which a rare species or native plant community is or was present (MnDNR, 2015b).

agreement with the MnDNR to obtain a copy of the NHIS database for internal Project review. The NHIS database comprises locational records of rare plants, rare animals, and other rare sensitive natural resources features (including native plant communities and animal aggregations [such as nesting colonies]). The MnDNR study area has also been evaluated for preferred habitats of identified rare species in coordination with state and local agencies, and in accordance with Minnesota's endangered species law (Minnesota Statutes 84.0895).

3.10.1.2 Habitat

The habitat study area is defined as the area that extends 100 feet around the Project's limits of disturbance.⁶⁰ Habitat is not specifically protected under local, state, or federal law, unless the habitat is designated as critical habitat for a federally listed threatened or endangered species that is regulated by the ESA. Critical habitat directly associated with federally listed threatened or endangered species is discussed as a part of the assessment of threatened and endangered species (See Sections 3.10.2.1 and 3.10.3.1 for a discussion of affected environment and environmental consequences regarding threatened and endangered species, respectively).

Some regulated resources within the habitat study area could be associated with habitat. For instance, the removal of trees could have an impact on existing habitat and be regulated under various municipal zoning and tree ordinances. In response to ordinance requirements, the Council collected tree survey data in the *Kenilworth Corridor Vegetation Inventory* and the *Opus Hill Tree Survey* (see Appendix C for instructions on how to access these supporting documents).

The existing habitat within the habitat study area has been assessed through the review and evaluation of five environmental spatial data sources created by MnDNR: (1) Minnesota Land Cover Classification System (MLCCS), (2) Regional Ecological Corridors, (3) Regionally Significant Ecological Areas, (4) Native Plant Communities, and (5) Sites of Biodiversity Significance. This analysis is documented in the *Southwest LRT Habitat Analysis* technical report that is listed in Appendix C. The resulting data from the *Southwest LRT Habitat Analysis* technical report were also utilized to quantify the Project's long-term direct and short-term impacts on habitat, as appropriate. There are no regulatory requirements associated with these spatial data sources; they were reviewed to support the analysis of existing habitat within the habitat study area.

In addition to the environmental spatial data analysis associated with habitat, all wetland habitat areas within the Project's defined wetland study area were identified and field delineated as required by local, state, and federal law. See Section 3.9 for information on wetlands identified within the wetland study area.

3.10.1.3 Migratory Birds

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712) governs the taking, killing, possession, transportation, and importation of migratory birds, including related items such as eggs, parts, and nests. Such actions are prohibited unless authorized under a valid permit. This law applies to migratory birds that are native to the United States and its territories, as catalogued in the 50 CFR 10.13 List of Migratory Birds.⁶¹ In addition to being regulated by the Migratory Bird Treaty Act of 1918, bald eagles and golden eagles are protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Statutes [Stat.] 250), which prohibits taking, possession, or commerce of these two migratory bird species.

The Minnesota Ornithologists' Union maintains composite lists containing accepted records of bird species observed within each county in Minnesota, and the MnDNR records element occurrences of eagle nesting sites in the NHIS. The *Hennepin County Composite List* (Minnesota Ornithologists' Union, 2015)⁶² was cross-referenced with the 50 CFR 10.13 list of migratory birds in October 2015 to determine the regulated species that have been observed in the migratory bird study area, which is defined as Hennepin County. This analysis is documented in the *Southwest LRT Migratory Bird Analysis* technical report that is listed in Appendix C. The

⁶⁰ The study area used for habitat analysis has been refined since publication of the Draft EIS due to development of the Project. The Draft EIS used a study area that consisted of the area one-half mile on either side of the build alternatives.

⁶¹ See <http://www.gpo.gov/fdsys/granule/CFR-2000-title50-vol1/CFR-2000-title50-vol1-sec10-13>.

⁶² See <http://moumn.org/cgi-bin/countychecklist.pl?county=Hennepin>.

NHIS database was also reviewed in October 2015 to identify any element occurrences of bald or golden eagle nests within the migratory bird study area.

In addition, MnDNR maintains a spatial representation of designated Migratory Waterfowl Feeding and Resting Areas⁶³ located throughout the state of Minnesota. The most current available data (MnDNR, 2005) were reviewed in June 2015 to assess the presence of potential migratory waterfowl habitat within the migratory bird study area.

3.10.2 Affected Environment

The following sections provide an overview of the existing environmental conditions regarding threatened and endangered species, habitat, and migratory birds in each defined study area.

3.10.2.1 Threatened and Endangered Species

A review of the USFWS Endangered Species Program website identified the presence of three threatened or endangered species within the USFWS study area, as summarized in Table 3.10-1.

TABLE 3.10-1

Summary of Federally Listed Threatened or Endangered Species

Scientific Name	Common Name	Federal Status	Preferred Habitat
<i>Lampsilis higginsii</i>	Higgins eye (pearly mussel)	Endangered	Large rivers with deep water and moderate current
<i>Epioblasma triquetra</i>	Snuffbox mussel	Endangered	Small- to medium-sized creeks with swift current
<i>Myotis septentrionalis</i>	Northern long-eared bat	Threatened	Winter: Caves and mines Summer: Cavities or crevices of live or dead trees

The Council participated in interagency cooperation with the USFWS in 2015, to help ensure the Project does not jeopardize the existence of listed species. The FTA made a determination that the Project will have “no effect” on the Higgins eye (pearly mussel) and Snuffbox mussel, or their associated critical habitats, and that the Project “may affect, but is not likely to adversely affect” the northern long-eared bat. The USFWS concurred with these determinations on September 25, 2015 and October 27, 2015 (see Appendix N for agency coordination letters).⁶⁴

The MnDNR identified element occurrences of one endangered species, four threatened species, and six special concern species within the MnDNR study area, as stated in a letter from MnDNR on January 31, 2014, and confirmed in a response dated August 4, 2015 (see Table 3.10-2). Of these, the MnDNR identified one state threatened species, Blanding’s turtle (*Emydoidea blandingii*), as the only rare species that *may* be adversely affected by the proposed Project (see Appendix N for agency coordination letters). This species has the potential to be adversely affected because it has been reported within the MnDNR study area and because the Blanding’s turtle is the only state-listed species that has suitable habitat within the MnDNR study area.

In addition to the NHIS review performed by MnDNR, the Council performed an independent review of the NHIS database in August 2015 to determine the proximity of the Blanding’s turtle element occurrence in relation to the areas that will be disturbed by the Project. Based on this review, the closest Blanding’s turtle element occurrence is 0.9 mile from any area that will be disturbed by the Project.

⁶³ See <http://www.dnr.state.mn.us/wildlife/shallowlakes/mwfra.html>.

⁶⁴ The Project’s informal Section 7 consultation was completed under the interim 4(d) rule for the northern long-eared bat. The USFWS announced the final 4(d) rule for this species on January 13, 2016. FTA’s original determination that the Project “may affect, but is not likely to adversely affect” the northern long-eared bat remains adequate under the final 4(d) rule.

TABLE 3.10-2

Summary of State-Listed Threatened, Endangered, or Special Concern Species

Scientific Name	Common Name	State Status	Preferred Habitat
<i>Erythronium propullans</i>	Dwarf trout lily	Endangered	Wooded floodplains, river terraces, or north-facing slopes above or near streams
<i>Emydoidea blandingii</i>	Blanding's turtle	Threatened	Wetland complexes and adjacent sandy uplands
<i>Notropis anogenus</i>	Pugnose shiner	Threatened	Clear, glacial lakes and streams with submerged vegetation
<i>Valeriana edulis</i> var. <i>ciliata</i>	Valerian	Threatened	Calcareous fens, wet meadows, and moist prairies
<i>Besseyia bullii</i>	Kitten-tails	Threatened	Oak savanna communities, dry prairies, and oak woodlands
<i>Etheostoma micoperca</i>	Least darter	Special Concern	Freshwater streams and lakes with cool to warm waters
<i>Falco peregrinus</i>	Peregrine falcon	Special Concern	Cliff ledges along rivers or lakes; buildings and bridges in urban settings
<i>Gallinula galeata</i>	Common gallinule	Special Concern	Freshwater cattail-bulrush marshes
<i>Perimyotis subflavus</i>	Tricolored bat	Special Concern	Winter: Caves and mines Summer: Caves, mines, and/or trees
<i>Ligumia recta</i>	Black sandshell	Special Concern	Riffle and run areas of medium to large rivers
<i>Setophaga citrina</i>	Hooded warbler	Special Concern	Large tracts of mature deciduous forests

3.10.2.2 Habitat

The analysis associated with existing habitat within the affected environment of the Project is documented in the *Southwest LRT Habitat Analysis* technical report (see Appendix C for instructions on how to access the report). Based on a review of MLCCS data, approximately 83.1 percent of the habitat study area (891 acres) consists of non-natural land cover types (impervious surfaces and cultivated vegetation), which is common in urbanized areas. Natural land cover types (herbaceous, woodlands, forests, shrublands, and water) make up approximately 16.9 percent (181 acres) of the habitat study area. The MLCCS land cover classifications are illustrated on Exhibit 3.10-1.

Portions of urban Regional Ecological Corridors (MLCCS-derived) occur in five locations throughout the habitat study area: near the proposed SouthWest Station, Interstate 494 near Eden Prairie Town Center Station, City West Station, Highway 100 near Wooddale Station, and Penn Station (Exhibit 3.10-2). Of the five Regional Ecological Corridors identified within the habitat study area, there are three that will be physically bisected by the Project.

Approximately 7.2 percent of the habitat study area (77.3 acres) consists of Regional Significant Ecological Areas (MLCCS-derived) that are ranked as having either low or medium ecological importance (Exhibit 3.10 2). There are no areas of high ecological importance located within the habitat study area. In addition, there are no data points or polygons associated with Native Plant Communities or Sites of Biodiversity Significance within the habitat study area (Exhibit 3.10-3).

In many instances, invasive species and noxious weeds dominate disturbed ecosystems, particularly in wetlands. Because the Project will generally be located in a previously disturbed/urbanized area containing wetlands, it is common for invasive species and noxious weeds to be present within the habitat study area. See Section 3.9 for analysis of field delineated wetland habitat areas located within the defined Project wetland investigation area.

3.10.2.3 Migratory Birds

The Migratory Bird Treaty Act regulates 343 species that have been observed in the migratory bird study area. Of those 343 species, 132 have been confirmed to nest in the migratory bird study area. Both the bald eagle and the golden eagle have been observed in the migratory bird study area, and the bald eagle has been confirmed to nest in the migratory bird study area. This analysis is documented in the *Southwest LRT Migratory Bird Analysis* technical report (see Appendix C for instructions on how to access this report).

EXHIBIT 3.10-1
Existing Land Cover

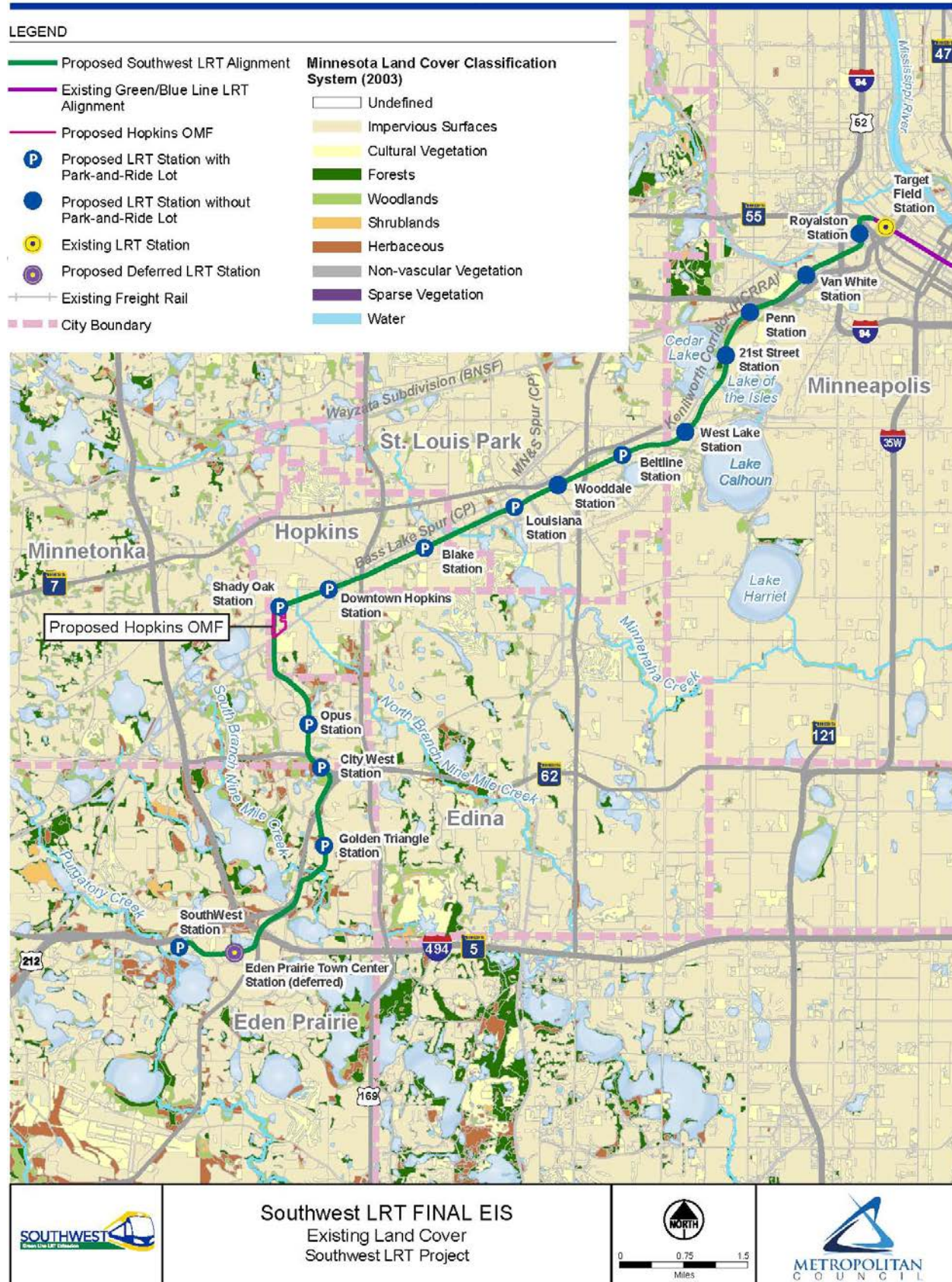


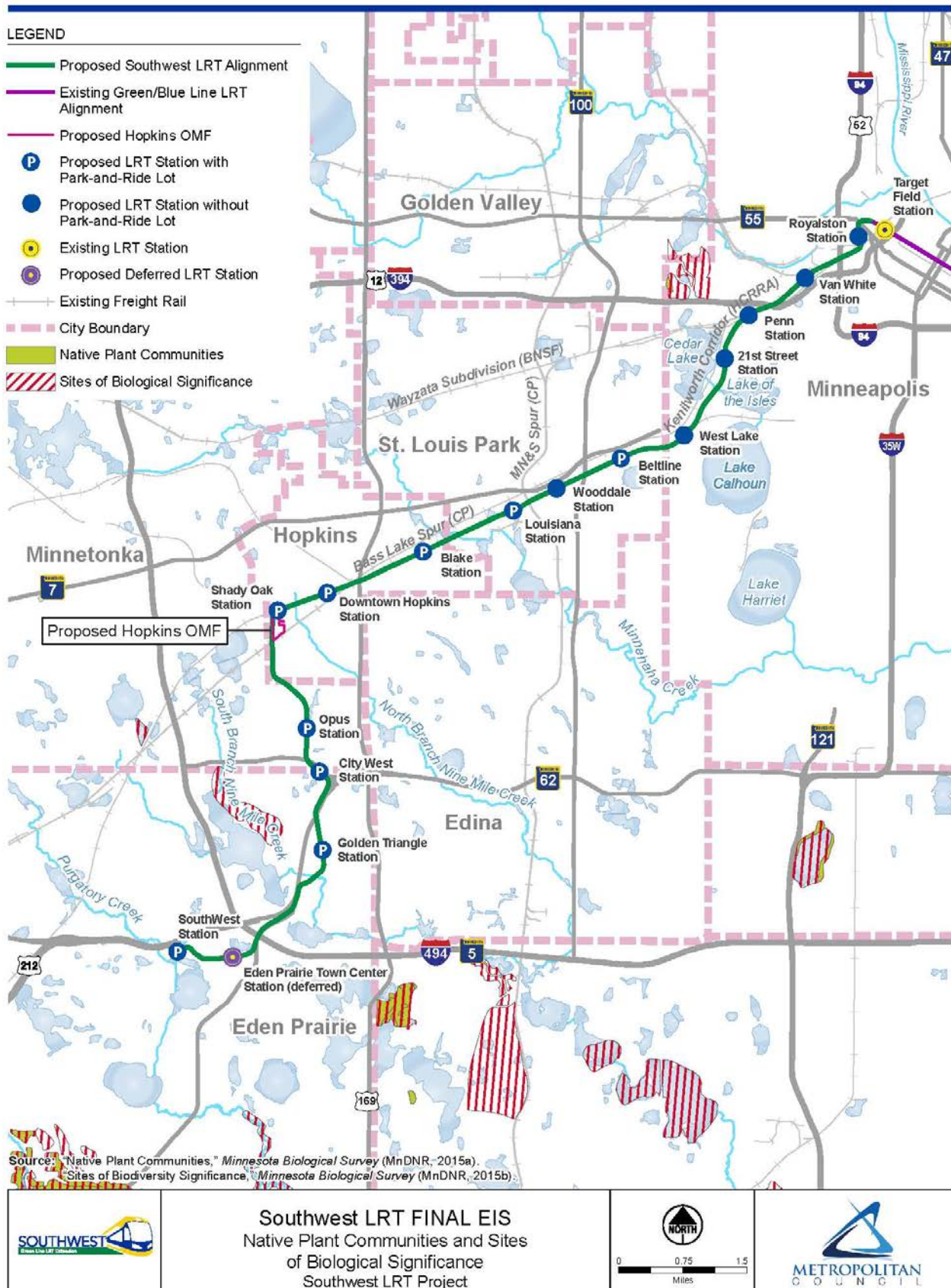
EXHIBIT 3.10-2

Regional Ecological Corridors and Regionally Significant Ecological Areas



EXHIBIT 3.10-3

Native Plant Communities and Sites of Biological Significance



Based on a review of the NHIS database, there are 34 element occurrences of bald eagle nesting sites in the migratory bird study area. However, the closest element occurrence of a bald eagle nesting site is approximately 3.2 miles away from any area that will be disturbed by the Project. In addition, a review of MnDNR's Migratory Waterfowl Feeding and Resting Area geospatial data layer (MnDNR, 2005) indicated that there are no areas meeting this criterion within the migratory bird study area.

3.10.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts on threatened and endangered species, habitat, and migratory birds from the Project.

3.10.3.1 Threatened and Endangered Species

A. Long-term Direct Impacts on Threatened and Endangered Species

The USFWS concurred that the Project will have “no effect” on the Higgins eye (pearlymussel) and Snuffbox mussel, or their associated critical habitats, and the Project “may affect, but is not likely to adversely affect” the northern long-eared bat. Impacts to the northern long-eared bat are generally temporary in nature and are usually the result of tree removal during construction. The Project will not require tree removal after construction is complete; therefore, the Project will not have long-term direct impacts on any federally listed threatened or endangered species.

As stated previously, there are no element occurrences of the Blanding's turtle within 0.9 mile of the Project's alignment. However, there is an element occurrence of the Blanding's turtle within the MnDNR study area, so the MnDNR has indicated that this species may be adversely affected by the Project. The following MnDNR recommendations are part of the Project's design to avoid long-term direct impacts to the Blanding's turtle (see Appendix N for agency coordination letters):

- Roads have been designed using the minimum standard for widths and lanes when practicable (which reduces road kills by slowing traffic and reducing the distance turtles need to cross).
- Wetland crossings have been elevated where practicable.
- Utility access and maintenance roads have been kept to a minimum where practicable (this reduces road-kill potential).
- Terrain disturbed by the Project will be left with as much natural contour as practicable.

B. Long-term Indirect Impacts on Threatened and Endangered Species

Light rail lines can advance the timing and increase the intensity of development within the limits allowed by local comprehensive plans, particularly surrounding proposed station areas. Long-term indirect impacts to federal- and state-listed threatened and endangered species may occur if new development occurs within the proposed station areas. Future development will be subject to the laws and regulations in place at the time of development.

C. Short-term Impacts on Threatened and Endangered Species

The Council engaged the USFWS to discuss potential short-term impacts to the northern long-eared bat from the construction of the proposed Project. These discussions resulted in the following measures to be implemented during construction to avoid impacts to the northern long-eared bat:

- Seasonal restriction on removal of trees during the summer pup season (June 1 to July 31) at the South Fork Nine Mile Creek
- No activities within $\frac{1}{4}$ mile of a known hibernacula

The MnDNR has provided a general list of recommendations for avoiding and minimizing short-term construction impacts to Blanding's turtle (see Appendix N for agency coordination letters). The following MnDNR recommendations are part of the Project's design to avoid short-term construction impacts to the Blanding's turtle:

- If found on site, turtles that are in imminent danger will be moved, by hand, out of harm's way. Turtles that are not in imminent danger will be left undisturbed.
- Silt fencing will be established to exclude turtles from construction areas near wetland habitats with the potential to support Blanding's turtles. The silt fencing will be removed after the area has been vegetated.
- Trenches created during construction will be checked for turtles prior to being backfilled.
- Graded areas will be revegetated with native grasses and forbs where practicable.

In addition, MnDNR provided the Council with a Blanding's turtle flyer to be distributed to contractors to inform them of the turtle's potential presence and provide typical construction BMPs (see Appendix N for agency coordination letters). This flyer will be provided to applicable contractors.

3.10.3.2 Habitat

A. Long-term Direct Impacts on Habitat

Long-term impacts to habitat include removal, conversion, degradation, or splitting of existing habitat within the areas where the Project's permanent civil improvements will be located. The Project will result in a loss and/or degradation of vegetated areas associated with five natural land cover types, which could result in a decrease in wildlife foraging areas, breeding habitats, and nesting areas. The Project will result in approximately 60 acres of long-term direct impacts on habitat as summarized in Table 3.10-3.

TABLE 3.10-3
Summary of Long-term Direct Impacts to Natural Vegetated Land Cover Types

MLCCS Land Cover Classification	Long-term Direct Impacts to Natural Land Cover (acres)
Herbaceous	34.6
Woodlands	18.8
Forests	4.5
Shrublands	1.1
Water	0.9
Total	59.9

MLCCS = Minnesota Land Cover Classification System.

Source: MnDNR, 2008.

Approximately 43 acres of the Regionally Significant Ecological Areas with long-term direct impacts are ranked as "low" or "medium," and none is ranked as "high," as summarized in Table 3.10-4.

TABLE 3.10-4
Summary of Long-term Direct Impacts to Regionally Significant Ecological Areas

Ranking	Long-term Direct Impacts to RSEAs (acres)
1 (Low)	20.9
2 (Medium)	22.0
3 (High)	0
Total	42.9

RSEA = Regionally Significant Ecological Areas

Source: MnDNR, 2008.

The impacts associated with habitat loss and/or degradation have been avoided or minimized during Project Development through the design adjustment process, including shifting and/or elevating the transitway alignment and associated civil improvements, and using retaining walls and ballast curbs to minimize

impacts. Impacts not completely avoided will be mitigated appropriately after efforts to minimize the impact have taken place. Section 3.10.4.2 describes mitigation measures for habitat loss.

Three urban Regional Ecological Corridors will be bisected by the Project (see Exhibit 3.10-2). Because the proposed light rail alignment will be elevated over the corridors at Interstate 494 near the Eden Prairie Town Center Station and at Highway 100 near the Wooddale Station, only the corridor located at Penn Station could result in habitat fragmentation. To avoid habitat fragmentation at this location, appropriately sized and spaced openings will be provided in the permanent safety/security barriers (fences) in the area located approximately between 21st Street Station and Penn Station to maintain connectivity of terrestrial habitat and allow movement of terrestrial species, primarily small mammals.

In some cases, the Project will result in conversion of habitat type. For example, cutting trees will convert some areas from forested habitat to herbaceous habitat. Where the Project will result in the removal of trees, the Project has and will continue to coordinate with the local jurisdiction on design of the preservation or restoration of landscaping features through construction, as appropriate. See Section 3.9.5 for a discussion on conversion of aquatic habitat.

B. Long-term Indirect Impacts on Habitat

The Project will result in increased disturbance of habitat because of activities associated with the daily operation of the light rail (e.g., noise and lighting), as well as an increase in human activity in or adjacent to habitat areas. It is likely that the species that use habitat within the habitat study area have adapted to survive in urban areas and tolerate high levels of human activity given the limited habitat present. Other indirect impacts could occur if the induced development around the station areas results in direct impacts to natural habitat. The amount of these habitat effects will be limited, because the station areas are located in already urbanized and suburbanized areas.

C. Short-term Impacts on Habitat

The proposed light rail alignment and associated improvements will be located in a predominantly urban area. In general, species occurring in an urban setting are adapted to functioning within a highly variable and altered environment. In addition to the long-term direct impacts listed in Section 3.10.3.2.A, the Project will result in an additional short-term loss of vegetated areas associated with five natural land cover types, which could result in short-term loss of habitat within the areas that will be temporarily disturbed by the Project's construction activities. This loss of habitat is considered short-term because these areas will be revegetated upon the completion of the Project. The Project will result in approximately 23 acres of short-term impacts on habitat, as summarized in Table 3.10-5.

TABLE 3.10-5
Summary of Short-term Impacts on Natural Vegetated Land Cover Types

MLCCS Land Cover Classification	Short-term Impacts on Natural Land Cover (acres)
Herbaceous	15.1
Woodlands	5.1
Forests	2.0
Shrublands	0.8
Water	0.4
Total	23.4

MLCCS = Minnesota Land Cover Classification System.

Source: MnDNR, 2008.

Approximately seven acres of the Regionally Significant Ecological Areas with short-term impacts are ranked as a "low" or "medium," and none is rated as "high," as summarized in Table 3.10-6.

TABLE 3.10-6
Summary of Short-term Impacts on Regionally Significant Ecological Areas

Ranking	Short-term Impacts on RSEAs (acres)
1 (Low)	1.5
2 (Medium)	5.4
3 (High)	0
Total	6.9

RSEA = Regionally Significant Ecological Areas

Source: MnDNR, 2008.

The Project is implementing design features to avoid or minimize construction impacts by placing fencing to isolate areas of construction disturbance, developing a plan prior to construction to minimize the amount of trees and vegetation that will be removed as part of the Project, and protecting aquatic habitat (see Section 3.9 for additional information regarding surface water resources).

Aiding the spread of invasive species or noxious weeds will be avoided by implementing BMPs. An invasive species and noxious weeds management plan will be identified in the Project's construction specifications. The Council will monitor plan compliance during construction. Avoidance efforts will include the following BMPs: using certified weed-free fill when applicable; proper disposal of soils disturbed by the Project and known to contain a seed base of a prohibited invasive species and noxious weeds; and application of a native seed mix soon after grading or construction has been completed to avoid presenting colonization opportunities.

3.10.3.3 Migratory Birds

A. Long-term Direct Impacts on Migratory Birds

The Project will not have a long-term direct impact on migratory birds. It is likely that the regulated migratory bird species present in the migratory bird study area have adapted to survive in urban areas and tolerate high levels of human activity given the limited forest or woodland areas present. Therefore, the Project is not expected to result in long-term impacts on migratory bird populations.

B. Long-term Indirect Impacts on Migratory Birds

It is likely that the regulated migratory bird species present in the Project's vicinity have adapted to survive in urban areas and tolerate high levels of human activity given the limited forest or woodland areas present. Therefore, the Project is not expected to result in long-term indirect impacts on migratory bird populations.

C. Short-term Impacts on Migratory Birds

Short-term impacts on migratory birds are not anticipated as a result of the Project. Because the Project's light rail alignment will be located in a predominantly urban area, the species of migratory birds that regularly travel throughout or nest within this region are likely familiar with and/or have adapted to dealing with construction activities similar to those associated with construction of the Project.

However, construction activities associated with the Project might temporarily disturb a nesting site or alter the path of a migratory bird. To avoid those construction impacts, where appropriate, removal of trees, structures, buildings, brush, shrubs, tall grasses, or ground nesting habitat (i.e. short grasses, weeds, sand, shoreline areas) will occur outside of the local migratory bird primary nesting season (May 1 to August 31). If removal of trees, structures, buildings, brush, shrubs, tall grasses, or ground nesting habitat needs to occur during the primary nesting season, a field survey by a qualified biologist will be conducted to identify and locate nests of migratory birds before the removal of trees, structures, buildings, brush, shrubs, tall grasses, or ground nesting habitat will occur. Specifications within the construction contract will state protocol should active nests be encountered during the field survey prior to removal of trees, structures, buildings, brush, shrubs, tall grasses, or ground nesting habitat or should nests be discovered during construction.

The Council will comply with the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Statutes [Stat.] 250), which prohibits taking, possession, or commerce of these species. Specifications within the construction contracts will state that if an eagle nest is observed during construction, contractors will follow the standards included in the *National Bald Eagle Management Guidelines* (USFWS; 2007).⁶⁵

3.10.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term threatened and endangered species, habitat, and migratory bird impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Sections 3.10.3.1, 3.10.3.2 and 3.10.3.3 for additional information on the identified threatened and endangered species, habitat, and migratory bird impacts, avoidance measures, and BMPs, respectively).

3.10.4.1 Mitigation Measures for Impacts on Threatened and Endangered Species

No mitigation measures are warranted for long-term or short-term impacts to state or federally listed threatened and endangered species, because there will be no impacts due to the effectiveness of identified design features.

3.10.4.2 Mitigation Measures for Impacts on Habitat

This section describes the measures the Council will implement to mitigate the Project's long-term habitat impacts.

A. Long-term Mitigation Measures

Impact. Physical loss of habitat.

Mitigation. Native landscaping will be incorporated into the Project's design during Engineering, where applicable and appropriate. Within the Kenilworth Corridor specifically, the Council developed a landscape design that preserves and builds upon the natural character of the corridor, where applicable and appropriate.

B. Short-term Mitigation Measures

Impact. Temporary physical loss of habitat.

Mitigation. Habitat that is temporarily disturbed during construction will be re-seeded and restored, where appropriate, upon construction completion.

3.10.4.3 Mitigation Measures for Impacts on Migratory Birds

No mitigation measures are warranted for long-term or short-term impacts to migratory birds, because there will be no adverse impacts to migratory birds due to the effectiveness of identified design features and BMPs.

3.11 Air Quality and Greenhouse Gases

This section describes the long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on air quality and greenhouse gas (GHG) (see Section 3.17 for cumulative impacts). Comparative air quality data for the No Build Alternative are also provided in this section. This section includes an overview of the regulatory context and methodology used for the analysis; an assessment of existing built environment; a description of the anticipated impacts related to air quality and GHG; and a description of mitigation measures to implement with the Project. This analysis is supported by a memorandum discussing methodology, calculations, and results for transportation conformity, mobile source air toxics, and GHG analyses. See the *Air Quality and Greenhouse Gases Analysis, Methodology and*

⁶⁵ Standard USFWS guidelines for bald eagle management are located at <http://www.fws.gov/northeast/ecologicalservices/eaglenationalguide.html>.

Results Technical Memorandum (Technical Memorandum) listed in Appendix C. Instructions on how to access the *Technical Memorandum* are in Appendix C.

3.11.1 Regulatory Context and Methodology

This section describes the regulatory context related to air quality and GHG, and methodologies used to evaluate the project related air quality and GHG/climate change. The air quality impacts of the Project were analyzed by addressing criteria pollutants, a group of common air pollutants regulated by the United States Environmental Protection Agency (EPA) on the basis of information on the health and/or environmental effects of pollution. A qualitative evaluation of Mobile Source Air Toxics (MSATs) has also been performed for this project. The scope and methods of these analyses were developed in collaboration with the Minnesota Pollution Control Agency (MPCA), Hennepin County, the Metropolitan Council (Council), Minnesota Department of Transportation (MnDOT), and Federal Highway Administration (FHWA).

3.11.1.1 Regulatory Context

Federal Clean Air Act and National Ambient Air Quality Standards

Federal air quality policies are regulated through the federal Clean Air Act (CAA). The EPA adopted the CAA in 1970 and its amendments in 1977 and 1990. Pursuant to the CAA, EPA has established nationwide air quality standards, known as the National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50), representing the maximum allowable atmospheric concentrations for six criteria pollutants: ozone, nitrogen dioxide (NO₂), carbon monoxide (CO), particulate matter less than 10 microns in aerodynamic diameter (PM₁₀) and particulate matter less than 2.5 microns in aerodynamic diameter (PM_{2.5}), sulfur dioxide (SO₂), and lead. The NAAQS represent safe levels of each pollutant to avoid specific adverse effects to human health and the environment. A summary of the NAAQS is provided in the *Technical Memorandum*.

The Federal CAA requires EPA to classify areas in the country as attainment or nonattainment, with respect to each criteria pollutant, depending on whether the areas meet the national standards. Three air quality designations can be given to an area for a particular pollutant:

- **Nonattainment.** Ambient air quality monitoring data indicate that standards have not been consistently achieved.
- **Attainment.** Air quality standards have been achieved.
- **Unclassified.** There is not enough monitoring data to determine whether the area is in nonattainment or attainment.

Maintenance areas are the former nonattainment areas that are now consistently meeting the NAAQS, and have been reclassified by EPA from "nonattainment" to "attainment with a maintenance plan."

The 1977 CAA amendment requires each state to ensure that its actions "conform to" the state's air quality plan in nonattainment areas, developed and maintained in a State Implementation Plan (SIP), for each criteria pollutant that violates the applicable NAAQS. The SIP serves as a tool to avoid and minimize emissions of pollutants that exceed ambient threshold criteria and to achieve compliance with the NAAQS.

Transportation Conformity

The process for determining compliance with a SIP is known as "transportation conformity." Conformity to a SIP requires that a proposed project not cause a violation, worsen an existing violation, or delay timely attainment of the NAAQS. Transportation conformity is an analytical process required for all federally-funded transportation projects. Conformity requirements apply only in nonattainment and maintenance areas of the NAAQS.

Demonstration of conformity with the CAA takes place on two levels for transportation projects: the regional, or planning and programming level; and the project level. A project must conform at both levels to be approved. Regional conformity is demonstrated when a project is included in a financially constrained conforming Transportation Improvement Program (TIP) and Long-Range Transportation Plan. At project level, a project must not cause a new local violation of the NAAQS, or exacerbate an existing violation of the federal standards for CO, PM₁₀, and PM_{2.5}.

Conformity at the project level requires “hot spot” analysis if an area is nonattainment or maintenance for CO and/or PM₁₀ and PM_{2.5}. The localized CO, PM_{2.5}, and PM₁₀ hot spot analyses are not required for construction-related activities that occur only during the construction phase and last five years or less at any individual site (40 CFR 93.123(c)(5)).

Because the Project is located in Hennepin County, which is in a maintenance area for CO, the Project is subject to the transportation conformity requirements. Detailed methodologies for conformity demonstration are discussed in Section 3.11.1.2.

Mobile Source Air Toxics

In addition to the criteria pollutants, EPA also regulates air toxic emissions. Controlling mobile source air toxic (MSAT) emissions became a national priority with the passage of the Clean Air Act Amendments of 1990, whereby Congress mandated that the EPA regulates 188 air toxics, also known as hazardous air pollutants.

No federal or state ambient standards exist for MSATs. Specifically, EPA has not established NAAQS or provided standards for hazardous air pollutants. Methodologies for evaluating the MSAT effects related to the Project are discussed in Section 3.11.1.2.

Greenhouse Gases and Climate Change

GHGs are gases that trap heat in the atmosphere. These emissions occur from natural processes and human activities. The accumulation of GHGs in the atmosphere can potentially influence the long-term range of average atmospheric temperatures. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities (EPA, 2015).

Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as Executive Order 13693 – *Planning for Federal Sustainability in the Next Decade*, signed on March 19, 2015. Executive Order 13693 sets a goal of 40 percent reduction in GHG emissions by implementing more efficient federal agency operations and revokes and supersedes Executive Order 13524. It focuses on reducing GHGs internally in federal agency missions, programs, and operations.

The Council on Environmental Quality (CEQ) released revised draft guidance on the consideration of GHG in National Environmental Policy Act (NEPA) documents for all federal actions on December 18, 2014. The revised guidance established a reference point of 25,000 metric tons of CO₂-e emissions on an annual basis, below which a quantitative GHG emissions analysis is not warranted, unless quantification below that reference point is easily accomplished. The revised guidance went on to further state that if an Agency describes the emissions on a qualitative basis, it must include a discussion on why a quantitative analysis cannot be prepared for the given action.

State and local agencies are also taking initiatives to address the GHG emissions and climate change. Minnesota’s Next Generation Energy Act of 2007 established a 2015 reduction goal 15 percent below 2005 emissions. The longer term goals of the Next Generation Energy Act are to reduce emissions 30 percent below 2005 emissions by 2025, and 80 percent below 2005 emissions by 2050.

Consistent with the state GHG reduction target, the Hennepin County Board adopted the Cool County Initiative in 2007 (Hennepin County, 2007), calling for the reduction of GHG emissions by 15 percent by 2015, 30 percent by 2025, and 80 percent by 2050, from a baseline of 2005.

3.11.1.2 Methodology

This section discusses the methodologies used to evaluate the air quality impacts of the Project.

Transportation Conformity

Because the Project will be located in an area that is designated as maintenance for CO national air quality standards, the Project is subject to the transportation conformity requirements for CO emissions (i.e., demonstrate conformity at both regional and project levels).

Regional Conformity

At the regional level, Regional Transportation Plans (RTPs) are developed that include the transportation projects planned for a region over a period of years, usually at least 20 years. If a proposed project is included in a conforming and financially constrained RTP, and the design and scope of the Project is the same as that described in the RTP, the proposed project is deemed to meet regional conformity.

Project-Level Conformity

Demonstrating project level conformity requires that the project is also listed in the Regional Transportation Improvement Program (RTIP), with the same design concept and scope. The project must not cause a new local violation of the federal standards or exacerbate an existing violation of the federal standards for CO.

Because the Project is located in a CO maintenance area, project-level conformity was demonstrated by performing a CO “hot spot” analysis. The project-level hot spot analyses for PM₁₀ and PM_{2.5} are not required for this project because the Project is in an attainment area for these two pollutants.

Procedures for determining hot spot CO concentrations are set forth in 40 CFR 93.123; however, EPA approved a screening method for the Twin Cities area to determine if a detailed hot spot analysis is necessary (MnDOT, 2009).

- The first criterion in this screening method is to determine if the Project annual average daily traffic⁶⁶ (AADT) is greater than the benchmark AADT. The benchmark AADT for the Twin Cities is 79,400, as identified in MnDOT’s Intersection Benchmark Criteria for Twin Cities CO Maintenance Area (MnDOT, 2009). This value is equal to the highest intersection AADT in Twin Cities CO maintenance area based on 2007 data.
- The second criterion is to determine whether the Project involves one of the “top 10” intersections⁶⁷ in the Twin Cities CO Maintenance Area.

Following this EPA-approved approach, a screening analysis was performed for the affected intersections in the project vicinity by comparing the AADT at the affected intersections to the Twin Cities benchmark values. If the affected intersections have AADT less than the benchmark values and none of the intersections are within the top 10 intersections of the Twin Cities CO maintenance area, the Project demonstrates project-level conformity and a detailed CO hot spot modeling analysis is not required.

Mobile Source Air Toxic Analysis

Currently, FTA has not adopted guidance on evaluating MSAT impacts from transit projects. Therefore, MSAT impacts of the Project are evaluated following the FHWA’s *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA* (FHWA, 2012a).

Because the Project is expected to improve the regional and local traffic conditions when it is fully built by the opening year of 2020 and it does not involve adding diesel vehicle travel into the region, MSAT impacts because of the Project are highly unlikely; however, the Project will change localized vehicle traffic patterns, especially near the stations and parking facilities. The Project will have low potential MSAT effects. Therefore, a qualitative MSAT analysis was performed following the FHWA guidance (FHWA, 2012a).

⁶⁶ Annual Average Daily Traffic (AADT) represents the total volume of vehicle traffic over the course of an average 24-hour day. AADT is a theoretical value based on traffic volumes collected in the field which have then been adjusted to account for seasonal or day-of-the-week fluctuations in traffic.

⁶⁷ Top 10 Intersections have the highest vehicle volume and worst level of service in the Twin Cities CO Maintenance Area based on 2007 data. These intersections are:

Highway 169 at CSAH 81, Highway 7 at CSAH 101, Highway 252 at 85th Avenue, University Avenue at Snelling Avenue, Highway 252 at Brookdale Drive, Cedar Avenue at County Road 42, Highway 7 at Williston Road, University Avenue at Lexington Avenue, Highway 252 at 66th Avenue, Hennepin Avenue at Lake Street (MnDOT, 2009).

3.11.1.3 Greenhouse Gas and Climate Change

GHGs are different from other air pollutants evaluated in environmental reviews. Their impacts are not localized because these gases rapidly disperse into the global atmosphere; however, GHG emissions on a project level can serve as a proxy for assessing a proposed action's potential impact on climate change.

Currently, neither the EPA nor FTA has adopted quantitative GHG emission thresholds applicable to the Project. Nevertheless, GHG emissions associated with the regional vehicles (i.e., personal automobiles, transit buses, and rail vehicles) in the seven-county Twin Cities metropolitan area were estimated based on the projected changes in vehicle miles traveled (VMT) under the Project. GHG emissions were calculated by multiplying the VMT of each type of vehicle by the CO₂ emission factors taken from the *New and Small Starts Evaluation and Rating Process Final Policy Guidance* (FTA, 2013b).⁶⁸ Table 3.11-1 shows the New Starts GHG emission factors.

TABLE 3.11-1

FTA New Starts GHG Emission Factors (g CO₂e/VMT)^a

Mode	Current Year	10-year Horizon	20-year Horizon
Automobile	532	434	397
Bus – Diesel	3,319	2,854	2,721
Bus – Hybrid	2,655	2,283	2,177
Bus - CNG	2,935	2,524	2,406
Bus - Electric	2,934	2,441	2,303
Heavy Rail	3,211	3,106	3,073
Light Rail and Streetcar	4,779	4,623	4,574
Commuter Rail - Diesel (new) and DMU	7,970	7,970	7,970
Commuter Rail - Diesel (used)	7,970	7,970	7,970
Commuter Rail - Electric and EMU	5,821	5,632	5,572

^a Grams per carbon dioxide equivalent per vehicle mile traveled.

Acronyms: CNG = compressed natural gas; DMU = diesel multiple unit; EMU = electric multiple unit

Source: *New and Small Starts Evaluation and Rating Process Final Policy Guidance* (FTA, 2013b).

3.11.2 Affected Environment

This section describes the existing air quality conditions of Hennepin County where the Project is located. This section also includes a description of the air pollution criteria, MSATs, and GHGs.

3.11.2.1 Criteria Air Pollutants

Hennepin County has been designated as a maintenance area for CO and SO₂ (1971 standard) by EPA. Because of the maintenance designation for CO, the transportation air quality conformity rule (40 CFR Part 93, Subpart A) applies to the region. For the other pollutants listed in Table 3.11-2, the Project is located in an attainment/unclassifiable area (ozone, NO₂, PM₁₀ and PM_{2.5}).

The monitoring data of Hennepin County are summarized in Table 3.11-2. The monitoring data demonstrated the criteria pollutants in the region are below the NAAQS for the last three years.

⁶⁸ FTA's evaluation of environmental benefits in the New Starts guidance (FTA, 2013b) estimates GHG emissions by using a combination of tools best suited for assessing emissions from different vehicle types and regulated air pollutants. Emission rates of automobiles, diesel, and compressed natural gas (CNG) transit buses are based on MOVES 2010a; and electric powered vehicles (including transit vehicles) PM, volatile organic compound, and CO forecasts are based on current emission levels in Argonne National Laboratory's Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model (GREET) model and forecast generating mix from the U.S. Department of Energy's Annual Energy Outlook.

TABLE 3.11-2

Ambient Air Quality Monitoring Data of Hennepin County

Pollutant	2011	2012	2013	NAAQS
Ozone ^a				
1-hour average	ND	ND	0.075 ppm	0.075 ppm
CO ^b				
1-hour average	1.9 ppm	2.6 ppm	1.8 ppm	35 ppm
8-hour average	1.3 ppm	1.3 ppm	1.1 ppm	9 ppm
NO ₂ ^b				
1-hour average	ND	ND	54 ppb	100 ppb
PM ₁₀ ^c				
24-hour average	60 µg/m ³	37 µg/m ³	39 µg/m ³	150 µg/m ³
PM _{2.5} ^d				
24-hour average (98th Percentile)	25 µg/m ³	25 µg/m ³	21 µg/m ³	35 µg/m ³
Annual arithmetic average	8.6 µg/m ³	8.8 µg/m ³	9.1 µg/m ³	12 µg/m ³
SO ₂ ^{e,f}				
1-hour average	7 ppb	9 ppb	18 ppb	140 ppb
24-hour average	2 ppb	4 ppb	16 ppb	75 ppb

^a Ozone monitoring data were from 1444 E. 18th Street in Minneapolis.^b CO and NO₂ monitoring data were from 1444 E. 18th Street and 528 Hennepin Avenue in Minneapolis.^c PM₁₀ monitoring data were from 309 South 2nd Avenue in Minneapolis.^d PM_{2.5} monitoring data were from 2727 South 10th Avenue in Minneapolis and 5005 Minnetonka Boulevard in St. Louis Park.^e SO₂ monitoring data were from 528 Hennepin Avenue in Minneapolis.^f Project-level SO₂ analysis is not required under conformity regulations (<http://www3.epa.gov/otaq/stateresources/transconf/regs/42Ob12013.pdf>).Acronyms: µg/m³ = micrograms per cubic meter; ND = no data collected; ppb = parts per billionSource: EPA, 2014. <http://www3.epa.gov/airdata/>.

3.11.2.2 Mobile Source Air Toxics

The regional or local air toxic concentrations of MSAT emissions are affected by changes of vehicle mix types and miles traveled (FHWA, 2012a). Nationwide MSAT emissions are expected to be lower than present levels in the future years as a result of EPA's national control programs that are projected to reduce annual MSAT emissions (FHWA, 2012a). For example, based on an FHWA analysis using EPA's MOVES2010b model, as illustrated on Exhibit 3.11-1, even if VMT increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.

Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures; however, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future.

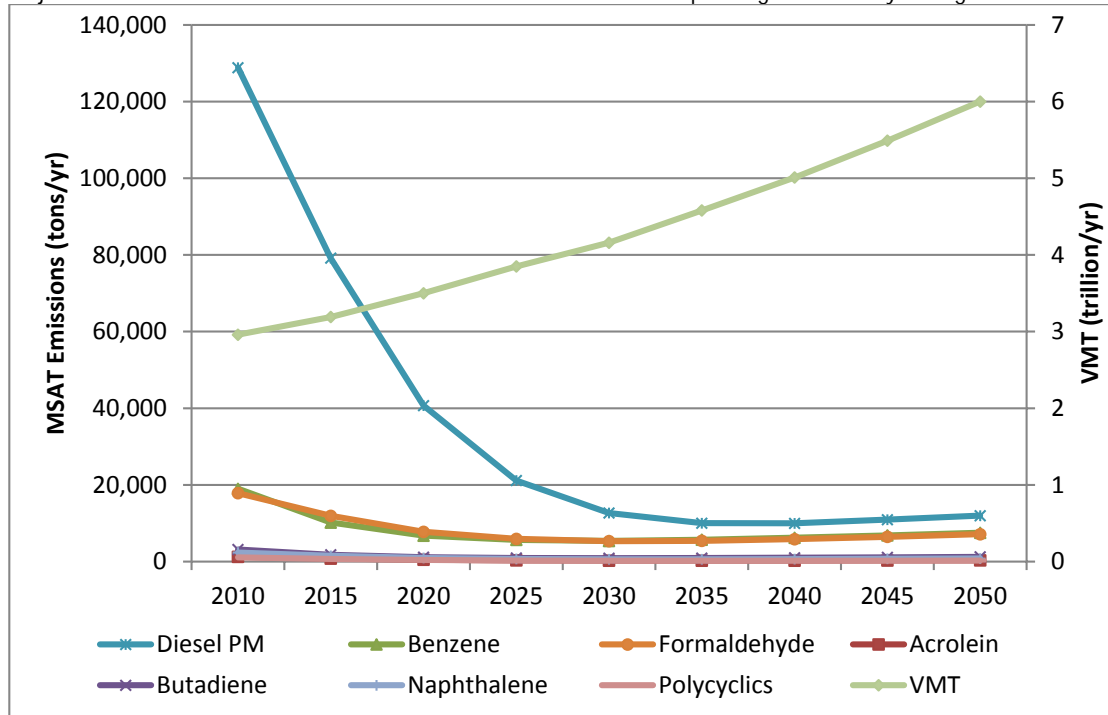
3.11.2.3 Greenhouse Gases

Minnesota's GHG inventory, published in March 2008, provides historical GHG emissions estimates from 1990 through 2005 and reference case projections from 2006 to 2025. GHG emissions in 2012, expressed as CO₂e, totaled 154 million tons. The electric power and transportation sectors together account for 56 percent of the 2012 GHG emissions in the state. Between 2005 and 2012, GHG emissions from Minnesota declined by 11 million tons of CO₂e, or about 7 percent, with the most significant reductions coming from electric power utilities and transportation energy use (MPCA and Minnesota Department of Commerce, 2015).

Since 2007, Hennepin County has conducted annual inventory of GHG emissions. Based on Hennepin County's 2012 report (Hennepin County, 2013a), CO₂e emissions from Hennepin County

EXHIBIT 3.11-1

Projected National MSAT Emission Trends 1999 – 2050 for Vehicles Operating on Roadways using MOVES2010b Model



Note: Trends for specific locations may be different, depending on locally derived information representing VMT, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.

Source: EPA MOVES2010b model runs conducted during May – June 2012 by FHWA (FHWA, 2012a).

operations totaled approximately 92,000 metric tons, which continues a trend of decreasing GHG emissions and demonstrates that the county is on track to meet its goal of a 15 percent reduction from the 2005 emission level of 107,000 metric tons by 2015.

3.11.3 Environmental Consequences

The Project will result in changes to air quality due to changes in air pollutant emissions from construction and operation of the Project. During construction, vehicle and construction equipment exhaust emissions and fugitive dust emissions from earth-moving activities will result in temporary air quality impacts. During operation, switching of travel mode and the subsequent changes of traffic conditions in the project vicinity will result in localized air quality impacts. The air quality impacts for the Project were evaluated in this chapter for the horizon year of 2040.

3.11.3.1 Transportation Conformity

The Project will be located in a federal maintenance area for CO and SO₂; therefore, the Project is subject to transportation conformity requirements and needs to demonstrate regional and project-level conformity.

A. Regional Conformity

Regional conformity for transportation projects is satisfied by inclusion of the transportation project in an approved RTP and TIP. The proposed project is listed in the region's long-range transportation plan, the *2040 Transportation Policy Plan (TPP)* (Council, 2015e) as "Metro Green Line Extension, 16-mile light rail extension of the Green Line with plans to include 16 new stations from Minneapolis to Eden Prairie." The Council adopted the 2040 TPP on January 14, 2015. The FHWA/FTA approved the conformity determination of the 2040 TPP on March 13, 2015. The Project is also included in the 2015-2018 TIP that was adopted by the Council on September 24, 2014, and approved by the FHWA/FTA on November 5, 2014. The regional analysis of the 2040 TPP and the 2015-2018 TIP shows that the planned emissions are below the EPA-established emissions budget for the region. The Project does not interfere with the implementation of any transportation control measures included in the SIP. Although the total length of the light rail extension

changed from 16 miles to 14.5 miles, after design adjustments were identified by the Council in July 2015, the overall project's design concept and scope are consistent with what were used in the 2040 TPP and 2015-2018 TIP (through Amendment conformity analyses). The relevant pages showing the project list in the TPP and TIP as well as the FHWA/FTA approval letters are included in *Air Quality and Greenhouse Gases Analysis Methodology and Results Technical Memorandum*, listed in Appendix C. Instructions on how to access the *Technical Memorandum* are in Appendix C.

The proposed freight rail modifications (see Section 4.4) included within the Project are not included in the Metropolitan Planning Organization's TPP or in the four-year TIP. The modifications to freight rail under the Project will not result in the relocation of the freight rail to another corridor, additional freight train trips, or unforeseen stops or idling of freight trains compared to the current freight rail operating scenario. Therefore, under the MnDOT definition, the freight rail modifications within the Project are not considered a regionally significant project for the purposes of air quality conformity and are not required to be included in the TPP or TIP.

As such, the Project conforms to the requirements of the CAA and the Transportation Conformity Rule (40 CFR Part 93).

B. Project-level Conformity

The Project will be located in a federal maintenance area for CO and SO₂ and, as such, under the conformity rule, must also demonstrate project-level conformity for CO. This section evaluates whether the proposed project will cause or contribute to any new localized CO violations.

Carbon Monoxide Hot Spot Analysis

This section describes the potential CO impacts from vehicle traffic at intersections that will be affected by the Project.

Following the CO hot spot screening procedure approved by EPA for the Twin Cities CO Maintenance Area as discussed in Section 3.11.1.2, the forecasted AADT at intersections that will be affected by the Project were compared to the Twin Cities CO Maintenance Area's benchmark AADT of 79,400, as identified in MnDOT's *Intersection Benchmark Criteria* (MnDOT, 2009). A list of the intersections that will be affected by the Project and the forecasted AADT at each of the intersection in 2040 for the Project are shown in the *Technical Memorandum*. The highest AADT at the affected intersections will be 63,330, located at the intersection of Blake Road (CSAH 20) and Highway 7. Because the worst-case AADT of the affected intersection is less than the benchmark AADT of 79,400, all other intersection AADTs are lower than the CO screening procedure benchmark. In addition, none of the intersections are among the "top 10" intersections that have the highest traffic volumes in the Twin Cities CO Maintenance Area.

As discussed above, the Project is not be expected to cause localized CO concentrations that violate the NAAQS, and a detailed modeling analysis of CO "hot spot" is not required.

3.11.3.2 Mobile Source Air Toxics Analysis

The Project will cause changes in VMT for a variety of vehicles such as passenger vehicles, buses, and rail vehicles. These VMT changes will result in changes in the MSAT emissions locally and regionally. Potential MSAT effects from the Project operations were evaluated following the FHWA Memorandum titled *Interim Guidance Update on Air Toxic Analysis in NEPA Documents* (FHWA, 2012a).

According to the interim guidance, the types of projects considered to have low potential for MSAT effects include those that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions.

The Project will improve access and mobility to the jobs and activity centers in the Minneapolis central business district, and support regional transportation efficiency. The Project is projected to reduce vehicle travel on roadways of the region when passengers switch from driving or using buses to light rail. Therefore, the Project will not create or add significant capacity to urban highways, or concentrate high levels of diesel vehicles at a single location, and has design year (2040) traffic less than 140,000 AADT.

As shown in Table 3.11-3, the regional VMT for cars and trucks for the Project will be lower than those for the No Build Alternative. The VMT decrease of cars and trucks under the Project is attributed to removal of vehicles from roadways when people switch from driving to using light rail. There will be an increase in bus VMT from Metro Transit buses with the Project, but the bus VMT increase is lower than the VMT reduction by cars and trucks, resulting in a net decrease of VMT. Therefore, the overall MSAT emissions from vehicles on the region's highways and surface streets will decrease compared to the No Build Alternative.

TABLE 3.11-3

Average Weekday VMT of the Region ^a

	2013 VMT	2040 VMT	
	Existing	No Build	Project
Cars	79,205,393	99,435,381	99,317,589
Trucks	2,454,774	3,192,153	3,191,577
Bus (Metro Transit)	98,430	107,478	112,942
Diesel Bus	90,950	99,310	104,358
Hybrid Bus	7,481	8,168	8,584
Bus (Other Agencies, Diesel)	48,539	85,099	83,924
LRT	14,480	23,997	33,013
Commuter rail	1601	1601	1601
Total VMT	81,823,217	102,845,709	102,740,646

^a Regional VMT refers to data for the seven-county Twin Cities metropolitan area.

Source: AECOM Travel Demand Model, August 2015.

Project operations will have the potential effect of increasing MSAT emissions in the vicinity of nearby homes, schools, and businesses; therefore, under the Project there may be localized areas where ambient concentrations of MSATs will be higher than under the No Build Alternative. The localized increases in MSAT emissions will likely occur near the proposed light rail stations, the park-and-ride lots, and OMF; however, as discussed in the *Technical Memorandum*, the magnitude and the duration of these potential effects cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific health impacts. In addition, even if these increases do occur, they will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations.

In summary, the Project in the design year is expected to be associated with lower levels of MSAT emissions in the region, relative to the No Build Alternative, along with benefit from improvements in speed and reductions in region-wide vehicle traffic. There could be slightly higher MSAT levels in localized areas where Project-related activities (e.g. automobile trips to park-and-ride lots) will occur closer to homes, schools, and businesses. (MSAT levels are likely to decrease over time due to nationally mandated cleaner vehicles and fuels.)

This MSAT analysis includes a basic analysis of the likely MSAT impacts of the proposed project. Limitations of information and methodology for the MSAT analysis, in accordance with CEQ regulations regarding incomplete or unavailable information (40 CFR 1502.22[b]), are included in the *Technical Memorandum*.

3.11.3.3 Greenhouse Gas

This section discusses the GHG emissions from project operation and construction. It concludes with an assessment of the Project's potential to aid in achieving state and regional GHG emissions reduction goals.

A. Project Operation Greenhouse Gas Emissions

The Project operation will result in a net GHG emissions reduction in the region and beneficial to GHG and climate change impacts. GHG emissions were estimated using the *New and Small Starts Evaluation and Rating Process Final Policy Guidance* (FTA, 2013b) as described in Section 3.11.1.3. A summary of the GHG emissions from the regional vehicles (i.e., personal automobile, trucks, and transit buses and rail vehicles) in 2040 is shown in Table 3.11-4. Detailed GHG emission calculations are in the *Technical Memorandum*.

TABLE 3.11-4

Annual Greenhouse Gas Emissions of the Region ^a (metric Tons in 2013 and 2040)

	2013	2040	
	metric tons	No Build (metric tons)	Build (metric tons)
Autos	15,380,103	14,408,684	14,391,615
Trucks	476,668	462,559	462,475
Bus (Metro Transit)	117,430	105,122	110,466
Bus (other Agencies, Diesel)	58,802	84,517	83,350
LRT	25,258	40,063	55,116
Commuter rail	4,657	4,657	4,657
Total Emissions	16,062,918	15,105,602	15,107,680

^a Region: The seven-county Twin Cities metropolitan area

When compared to 2013 existing conditions, the GHG emissions in 2040 will decrease by more than 955,000 and 957,000 metric tons per year, respectively, for the Project and No Build Alternative. These emission reductions are related to factors such as the overall improvements of the region's travel network, the use of newer and more fuel efficient vehicles, and the improvements of emission control technologies.

The Project will reduce regional VMT of automobiles, trucks, and buses on roadways in 2040 by approximately 113,000 miles (see Table 3.11-3) compared to No Build Alternative. Although the Project will generate GHG emissions from the proposed light rail operation and the additional Metro Transit bus service, the majority of these emissions will be offset by the GHG emission reductions from removing portions of passenger vehicles from the roadways in the region. The Project operation will increase the GHG emission in the Twin Cities area by approximately 2,000 metric tons per year in 2040 compared to No Build Alternative. Compared to the total GHG emissions from vehicles and transit rail in the Twin Cities area of over 15 million metric tons per year (Table 3.11-4), the 2,000 metric tons per year of GHG emissions increases are minimal (less than 0.015 percent), and thus are not anticipated to cause substantial impacts to the environment or climate change.

The proposed project construction may require removal of a limited number of trees and disturb some vegetated areas along the rail corridor. Trees and vegetation sequester CO₂ through the process of photosynthesis and store the gas as carbon in their biomass. When trees and vegetation are removed, some of their stored carbon may be released as CO₂ into the atmosphere, although the quantity and rate of CO₂ that is emitted may vary, depending on the amount of removal and how the biomass would be handled afterwards. Because the number of trees and the area of vegetation disturbance would be limited during Project construction, the effects on the sequestered CO₂ or the loss of carbon stored in the removed trees or vegetation would be minimal and thus are not further analyzed.

B. Project Construction Greenhouse Gas Emissions

Project construction will have the potential to emit GHGs from the construction equipment and vehicles. The short-term GHG emissions during the construction period of the Project will be temporary, and implementation of Best Management Practices (BMPs), such as using energy efficient construction equipment vehicles and limiting the equipment and vehicle idling time during construction, will reduce GHG emissions from construction activities.

The FHWA Infrastructure Carbon Estimator (ICE) model was used to estimate construction and maintenance GHG emissions. The ICE model estimates the lifecycle energy and GHG from the construction and maintenance of transportation facilities.

Construction activities for the Southwest LRT are planned between 2017 and 2019; therefore, the majority of construction was conservatively assumed to be over a three-year period. Construction project types, as input into the ICE model, are provided in the *Technical Memorandum*.

GHG emissions are categorized as upstream energy materials or direct energy for routine construction activities. Model results are shown in Table 3.11-5 as metric tons (MT) of carbon dioxide equivalent (CO₂e) per year. Changes of the GHG emissions due to direct emissions from Project construction will be minimal. Most of the GHG emission presented in Table 3.11-5 would be from the indirect upstream emissions of raw materials energy consumption, including raw material extraction, production, and transportation.

TABLE 3.11-5
Annual Greenhouse Gas Emissions

Energy Use Type	Bridges	Rail	Total
	(MT CO ₂ e/year)	(MT CO ₂ e/year)	(MT CO ₂ e/year)
Upstream Energy Materials	680	66,125	66,805
Direct Emissions Construction	150	3,718	3,868
Routine Maintenance	N/A	N/A	165
Total	830	69,843	70,838

Note: See *Technical Memorandum* for construction project types.

Source: Council, 2015

C. Conclusions

Currently, there are no quantitative GHG emission thresholds at federal or state levels that are applicable to the Project. The Project's construction emission is temporary, and the Project would make an effort to minimize the amount of emissions generated during construction. If amortized over the life of the Project, the GHG emission from this Project is minimal. In addition, the Project is included in the regional RTP and TIP, which consider climate change mitigation, adaptation and resilience for sustainable development of the region. Therefore, GHG emissions from the proposed Project will not hinder the region's GHG emission reduction efforts.

3.11.3.4 Indirect Air Quality Impacts

The Project will provide more options for public transportation; therefore, the reliance on passenger cars for daily work commute and recreational trips will be reduced as people choose transit instead of driving. The reduced vehicle travel on highways and local streets will help to relieve traffic congestion. Because air pollution tends to accumulate at locations with many vehicles idling or traveling at low speeds, the improved traffic conditions will reduce vehicle emissions and contribute to indirect air quality improvements.

3.11.3.5 Short-term Impacts on Air Quality

Project construction activities can result in short-term increases in dust and equipment-related emissions in the project vicinity. Exhaust emissions during construction will be generated by fuel combustion in motor vehicles and construction equipment, and particulate emissions will result from soil disturbance, earthwork, and other construction activities. Construction vehicle activity and disruption of normal traffic flow may result in increased motor vehicle emissions within certain areas. Potential air quality impacts will be short-term, occurring only while construction work is in progress. BMPs described below will be implemented to minimize the air pollutant emissions during construction.

The Project will comply with federal and state regulations, including the EPA's emission standards for on-road vehicles and off-road construction equipment, the state air regulations in Chapter 7023: Mobile and Indirect Sources, and the applicable MnDOT Standard Specifications for construction. The Project will also implement BMPs to avoid or minimize the temporary construction emission impacts. Examples of the short-term BMPs may include, but are not limited to the following:

- Minimization of land disturbance during site preparation
- Watering of the construction site
- Stabilization of dirt piles if they are not removed immediately
- Use of dust suppressants on unpaved areas
- Covering of trucks while hauling soil/debris offsite or transferring materials
- Minimization of unnecessary vehicle and machinery idling
- Use of energy efficient equipment and vehicles

EPA recommends the following measures to reduce short-term construction impacts to air quality. These measures will be implemented where applicable:

- Use ultra low-sulfur diesel fuel.
- Retrofit engines with an exhaust filtration device to capture diesel particulate matter before it enters the construction site.
- Position the exhaust pipe so that diesel fumes are directed away from the operator and nearby workers, thereby reducing the exposure of personnel to concentrated fumes.
- Use catalytic converters to reduce CO, aldehydes, and hydrocarbons in diesel fumes. These devices must be used with low sulfur fuels.
- Attach a hose to the tailpipe of diesel vehicles running indoors and exhaust the fumes outside, where they cannot reenter the workplace. Inspect hoses regularly for defects and damage.
- Use enclosed, climate-controlled cabs pressurized and equipped with high efficiency particulate air (HEPA) filters to reduce the operators' exposure to diesel fumes. Pressurization ensures that air moves from inside to outside. HEPA filters ensure that any incoming air is filtered first.
- Regularly maintain diesel engines, which is essential to keep exhaust emissions low. Follow the manufacturer's recommended maintenance schedule and procedures. Smoke color can signal the need for maintenance. For example, blue/black smoke indicates that an engine requires servicing or tuning.
- Reduce exposure through work practices and training, such as turning off engines when vehicles are stopped for more than a few minutes, training diesel-equipment operators to perform routine inspection, and maintaining filtration devices.
- Purchase new vehicles that are equipped with the most advanced emission control systems available.
- With older vehicles, use electric starting aids such as block heaters to warm the engine to reduce diesel emissions.
- Use respirators, which are only an interim measure to control exposure to diesel emissions. In most cases, an N95 respirator is adequate. Workers must be trained and fit-tested before they wear respirators. Depending on work being conducted, and if oil is present, concentrations of particulates present will determine the efficiency and type of mask and respirator. Personnel familiar with the selection, care, and use of respirators must perform the fit testing. Respirators must bear a NIOSH approval number.

According to 40 CFR 93.123(c)(5), "CO, PM₁₀, and PM_{2.5} hot spot analyses are not required to consider construction-related activities which cause temporary increases in emissions. Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site." Because the duration of construction activities for the Project will not exceed five years, construction emissions are considered a temporary impact and are not required for the project-level conformity analysis.

3.11.4 Mitigation Measures

No mitigation measures related to long-term air quality and GHG impacts are warranted because air quality and GHG impacts associated with the Project operation will not be substantial. No mitigation measures related to short-term air quality are warranted because the construction emissions are expected to be temporary and will not cause long-term air quality impacts.

3.12 Noise

This section describes the long-term direct and indirect and short-term (construction) direct and indirect noise impacts from the Project (see Section 3.17 for cumulative impacts). This section provides an overview of the regulatory context and methodology used for the analysis, an assessment of existing noise conditions, a description of the anticipated impacts related to noise, and a description of mitigation measures to implement with the Project. A technical report has been prepared in support of this section (see Appendix K).

3.12.1 Regulatory Context and Methodology

This section describes the methodology used to assess predicted noise impacts for the Final EIS and to develop mitigation strategies. Noise has been assessed in accordance with guidelines specified in the FTA's *Transit Noise and Vibration Impact Assessment* guidance manual (FTA, 2006).

The FTA guidance manual is the primary source for the noise assessment methodology. Noise impacts were evaluated using the Detailed Noise Assessment methodology contained in Chapter 6 of the FTA guidance manual (FTA, 2006). The noise assessment included the following steps:

- Identify noise-sensitive land uses in the corridor using aerial photography, GIS data and field surveys, typically within 300 feet of the alignment (see Section 3.12.2.1).
- Measure existing noise levels in the corridor near sensitive receptors (see Section 3.12.2.2).
- Predict future project noise levels from transit operations, using Project preliminary engineering plans and information on speeds, headways, track type, vehicle type, and grade-crossing operations. The project noise level assessment included LRT operations, horns, and bells at grade crossings and stations, associated roadway improvements, and changes and feeder bus operations at select stations. Details regarding the information used to predict future Project noise levels can be found in Appendix K.
- Assess the impact of the Project by comparing the projected future noise levels with existing noise levels using the FTA noise impact criteria in Chapter 3 of the FTA guidance manual.
- Recommend mitigation at locations where projected future noise levels exceed the FTA impact criteria.

For roadway improvements and changes to feeder bus routes, a screening procedure consistent with FTA methodology was conducted to determine if any impacts specific to these improvements and/or changes would have occurred. This included identifying locations where changes to the traffic volumes, roadways, or bus routes were significant and identifying any potentially sensitive land uses near these areas. As reflected in the analysis presented within the following environmental consequences discussions, and except for locations with major park-and-ride facilities or where transit centers are to be constructed, the Project noise levels are dominated by LRT operations.

In addition, a construction noise impact assessment was conducted using the methodology contained in Chapter 12 of the FTA guidance manual (see Appendix K).

3.12.1.1 Understanding Noise

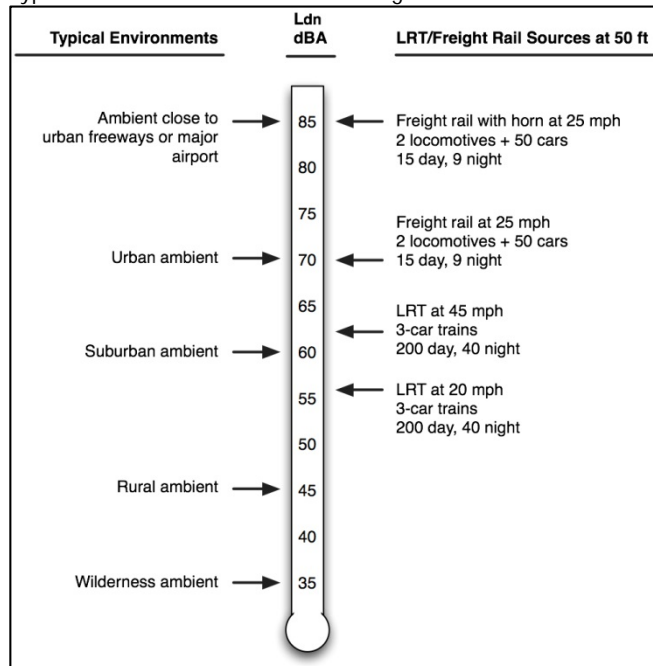
Sound is defined as small changes in air pressure above and below the standard atmospheric pressure. Noise is usually considered to be unwanted sounds. The three parameters that define noise include:

- **Level.** The level of sound is the magnitude of air pressure change above and below atmospheric pressure, and is expressed in decibels (dB). Typical sounds fall within a range between 0 dB (the lower limits of human hearing) and 120 dB (the highest sound levels experienced in the environment). A three-dB change in sound level is perceived as a barely noticeable change outdoors and a 10 dB change in sound level is perceived as a doubling (or halving) of the sound level.
- **Frequency.** The frequency (pitch or tone) of sound is the rate of air pressure changes. It is expressed in cycles per second, or Hertz (Hz). Human ears can detect a wide range of frequencies from around 20 Hz to 20,000 Hz. However, human hearing is not effective at high and low frequencies, and the A-weighting system (dBA) is used to correlate with human response to noise. The A-weighted sound level has been widely adopted by acousticians as the most appropriate descriptor for environmental noise.
- **Time Pattern.** Because environmental noise is constantly changing, it is common to condense this information into a single number, called the "equivalent" sound level (Leq). The Leq represents the changing sound level over a period of time, typically one hour or 24-hours in transit noise assessments. The common noise descriptor used for LRT and freight rail projects is the Day-Night Sound Level (Ldn). It has been adopted by most agencies as the best way to describe how people respond to noise in their environment. Ldn is a 24-hour cumulative A-weighted noise level that includes all noises that happen within a day, with a 10-dB penalty for nighttime noise (10 pm to 7 am). This nighttime penalty means

that any noise events at night are equivalent to 10 similar events during the day. Typical Ldn values for various transit and freight operations are illustrated on Exhibit 3.12-1.

EXHIBIT 3.12-1

Typical Noise Levels from LRT and Freight Rail



Source: Cross-Spectrum Acoustics, 2015.

3.12.1.2 Noise Criteria

This section describes FTA and Minnesota Pollution Control Agency (MPCA) noise impact criteria and their applicability to the Final EIS noise assessment.

A. FTA Noise Criteria

FTA noise impact criteria are described in Chapter 3 of the FTA noise and vibration guidance manual (FTA, 2006). FTA noise impact criteria are based on well-documented research on community response to noise, existing noise levels, and the change in noise exposure due to a project. The FTA noise criteria compare project noise levels with existing noise levels (not the No Build noise condition).

FTA noise criteria are based on the land use category of the sensitive receptor. The Ldn descriptor is used to assess transit-related noise at residential land uses where overnight sleep occurs (Category 2), and the Leq descriptor is used to assess transit-related noise at other land uses, as shown in Table 3.12-1.

TABLE 3.12-1

Land Use Categories and Metrics for Transit Noise Impact Criteria

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor Leq(h) ^a	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use. Also included are recording studios and concert halls.
2	Outdoor Ldn	Residences and buildings where people normally sleep. This category includes homes, hospitals and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor Leq(h) ^a	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.

^a Leq for the noisiest hour of transit-related activity during hours of noise sensitivity

Source: FTA, 2006.

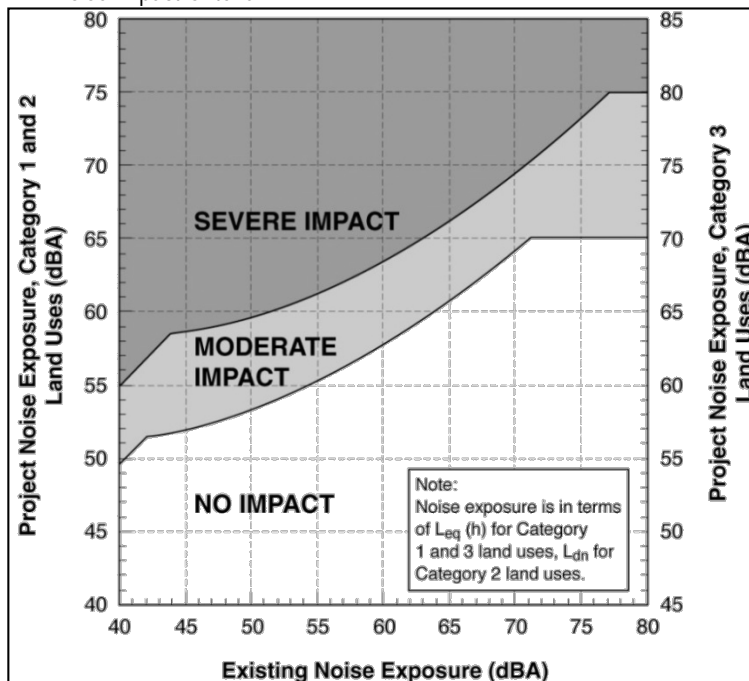
The noise impact criteria are defined by the two curves illustrated on Exhibit 3.12-2. The exhibit illustrates existing noise exposure and project-related noise exposure, and demonstrates that FTA noise impact thresholds vary with existing noise levels. The FTA noise impact criteria include three levels of impact, as illustrated on Exhibit 3.12-2. The severity of noise impact is characterized by two curves that allow for higher project noise exposure where there are higher levels of existing background noise, up to a threshold level beyond which project noise exposure would result in an impact. The left vertical axis in Exhibit 3.12-2 applies to FTA land use Categories 1 and 2, and the right vertical axis to Category 3. The three levels of impact include:

- **No Impact.** In this range, the proposed project is considered to have no impact since, on average, the introduction of the project will result in an insignificant increase in the number of people highly annoyed by the new project noise.
- **Moderate Impact.** At the moderate impact range, changes in the cumulative noise level are noticeable to most people, but may not be sufficient to cause strong, adverse reactions from the community. In this transitional area, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation, such as the existing noise level, projected level of increase over existing noise levels, and the types and numbers of noise-sensitive land uses affected.
- **Severe Impact.** At the severe impact range, a significant percentage of people are highly annoyed by the new project noise. Noise mitigation is applied for severe impact areas unless it is not feasible or reasonable (i.e., unless there is no practical method of mitigating the impact).

For locations with no exterior land use, such as apartment buildings or motels without exterior use areas (e.g., pools, patios, or picnic areas), and where outdoor impacts are identified, a supplemental interior noise level criterion of 45 dBA is used to assess the potential for impacts inside buildings.

EXHIBIT 3.12-2

FTA Noise Impact Criteria



Source: FTA, 2006.

B. MPCA Noise Criteria

MPCA has an established set of Noise Standards (Minnesota Rules, Chapter 7030), which provide limits on environmental noise using the L10 and L50 descriptors, which represent the noise level exceeded 10 percent (6 minutes) and 50 percent (30 minutes) of the time during an hour, respectively. The standards include both daytime and nighttime limits for three different categories of land use or noise area classification, with residential lands included in noise area classification 1. Classifications 2 and 3 are generally for commercial and industrial land uses, respectively. The standards are shown in Table 3.12-2.

TABLE 3.12-2
MPCA Noise Standards

Noise Area Classification	Daytime		Nighttime	
	L10 (dBA)	L50 (dBA)	L10 (dBA)	L50 (dBA)
1	65	60	55	50
2	70	65	70	65
3	80	75	80	75

dBA = decibels on an A-weighted scale

L10 = Noise level exceeded 10% of the time

L50 = Noise level exceeded 50% of the time

Source: Minnesota Rules Section 7030 Noise Pollution.

Because of the time limit component of the MPCA noise standards, the Project will not exceed the standards under the proposed operating conditions. Light rail vehicles will pass by a location for approximately 10 seconds 12 times an hour (based on the operating assumptions of 10 minute headways in each direction) for a total of 120 seconds, or two minutes. Because the duration of exposure to LRT noise does not exceed the L10 (six minutes) and L50 (30 minutes) time components, there is no potential for the Project to exceed MPCA thresholds. Because the Project does not exceed the MPCA thresholds, the FTA noise impact criteria described previously are more protective than the MPCA standards and have been used to assess and mitigate noise impacts identified within this Final EIS.

Information regarding existing noise levels in the noise study area and any exceedances of the MPCA standards can be found in Appendix K.

C. Construction Noise Criteria

The FTA's construction noise criteria, summarized in Table 3.12-3, were used for the short-term noise impact analysis. The FTA construction noise criteria provide adequate protection for short-term noise impacts and allow for reasonable mitigation measures to be applied to the Project. Additionally, MPCA noise criteria were evaluated for the Project, and the Project will work with local jurisdictions to ensure that reasonable measures are taken to limit construction noise.

TABLE 3.12-3
FTA Construction Noise Criteria

Land Use	8-hour Leq, dBA		Noise Exposure, dBA 30-day Average
	Day	Night	
Residential	80	70	75
Commercial	85	85	80
Industrial	90	90	85

dBA = decibels on an A-weighted scale

Leq = Equivalent sound level over a time period

Source: FTA, 2006.

3.12.2 Affected Environment

This section describes existing noise-sensitive land uses and noise levels within the noise study area.

3.12.2.1 Noise Sensitive Land Uses

Noise-sensitive land uses for the Final EIS were identified based on aerial photography, project drawings, and a site survey. Information regarding noise-sensitive land uses by city within the Project corridor can be found in Appendix K.

3.12.2.2 Existing Noise Measurements

Existing noise levels were measured at representative sites near the proposed project during March 2010, July and August 2013, and May 2015 (see Appendix K for additional detail). Measurement sites were selected to represent a range of existing noise conditions throughout the corridor. Measuring existing noise levels at sensitive locations along the corridor is an important step in the impact assessment, as the thresholds for impact in the FTA noise criteria are based on the existing noise levels. Noise measurements included both long-term (24-hour) and short-term (one-hour) monitoring of the A-weighted sound level at noise-sensitive locations. The additional noise measurements conducted in 2013 and 2015 were located in areas where measurements had not been conducted during the Draft EIS and in the freight co-location portions of the corridor in Hopkins, St. Louis Park, and Minneapolis. These additional efforts were necessary to update the existing condition noise measurements and to reflect changes in the freight operations since the Draft EIS.

Table 3.12-4 summarizes the results of the existing noise measurements, and Exhibits 3.12-3 and 3.12-4 illustrate the general location of the monitoring sites. The 15 long-term noise measurements were used to characterize the existing noise at residential locations because the FTA assessment methodology uses Ldn (24-hour noise descriptor) for all residential locations. The two short-term noise measurements were used to characterize the existing noise at non-residential locations because the FTA assessment methodology uses Leq (1-hour noise descriptor) for all non-residential locations. Two interior noise measurements were conducted to determine the project noise levels at locations where an impact was identified with no outdoor use identified. The first location was inside a hearing testing booth at an audiologist and the second was at the hotels in Eden Prairie where no outdoor land use was present (see Section 3.12.3.1 for more information).

At each site, the existing noise measurement was conducted at the same distance as the building(s) will be relative to the Project location (e.g., LRT tracks, alignments and operations) to allow for an accurate modeling of the noise impact assessment on the sensitive location. Existing ambient noise levels are described in Appendix K.

3.12.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect noise impacts from the Project. The long-term noise impact evaluation considers the increase in noise levels at sensitive receptors closest to the proposed light rail stations and track, as a result of the operation of the Project.

3.12.3.1 Long-term Direct Impacts from Noise

This section describes the long-term direct noise impacts that will result from the Project. The project team conducted a Detailed Noise Analysis (see Appendix K for more information). A summary of the analysis results are presented in Tables 3.12-5 and 3.12-6 for residential and institutional land uses, respectively. The tables include a tabulation of location information for each sensitive receptor group, the existing noise levels from all sources, the project noise levels from LRT operations, the FTA impact criteria (moderate or severe), and the type and number of noise impacts, without the implementation of mitigation measures. Because the Project would never exceed the MPCA standards, the FTA criteria are more protective in assessing impacts from the Project.

As shown in Table 3.12-5, the proposed Project will result in moderate noise impacts at 52 buildings and 237 residential units and severe noise impacts at 69 buildings and 558 residential units (see Exhibits 3.12-5 and 3.12-6). The majority of the noise impacts will be related to LRT horns sounding at FRA shared grade crossings in the corridor. The proposed tunnel in the Kenilworth Corridor will eliminate most noise impacts

compared to an at-grade light rail alignment within the same segment of the corridor. Without the tunnel, the number of noise impacts shown in Table 3.12-5 would be much greater.

A summary of each residential location with a projected noise level that exceeds the FTA criteria is contained in Appendix K.

TABLE 3.12-4

Summary of Existing Noise Level Measurements*

Site No.	City	Measurement Location	Measurement Start		Meas. Duration (hrs)	Noise Level (dBA) ^d	
			Date	Time		L _{dn}	L _{eq}
N2 ^a	Eden Prairie	Southwest Station Condos	7/25/2013	14:00	24	71	--
N3 ^a	Eden Prairie	Purgatory Creek Park	7/25/2013	7:30	1	--	54
N4 ^a	Eden Prairie	Apartments on Singletree Lane	8/7/2013	16:00	24	62	--
N25 ^b	Eden Prairie	Homestead Hotel	3/8/2010	10:07	24	61	--
N25a ^c	Eden Prairie	Hampton Inn/Baymont Inn	5/13/2015	Interior Noise Measurements ^e			
N26 ^b	Eden Prairie	Nine Mile Creek Apartments	3/2/2010	14:05	24	64	65
N5a ^c	Eden Prairie	ShopHQ	5/13/2015	11:02	1	--	53
N5 ^a	Minnetonka	Claremont Apartments	8/7/2013	14:00	24	57	--
N27 ^b	Hopkins	Nolan Drive	3/4/2010	10:15	24	62	--
N6a ^a	Hopkins	Hearing Care Specialists (Audiologist)	5/14/2015	Interior Noise Measurements ^e			
N6 ^a	Hopkins	6th Avenue and Excelsior Blvd	7/24/2013	14:00	24	65	59
N7 ^a	Hopkins	Jackson Ave S	7/24/2013	14:00	24	58	--
N8 ^a	Hopkins	Westside Apartments	7/25/2013	13:00	24	60	--
N9 ^a	St. Louis Park	Edgebrook Drive	7/25/2013	11:00	24	57	--
N14 ^a	St. Louis Park	W 37th Street	7/23/2013	11:00	24	58	54
N15 ^a	Minneapolis	Calhoun Isle Condos	7/23/2013	11:00	24	64	--
N16 ^a	Minneapolis	Kenilworth Place and S. Upton Ave	7/23/2013	10:00	24	61	--
N17 ^a	Minneapolis	21st Street and Upton Street	7/23/2013	11:00	24	56	--
N18 ^a	Minneapolis	Mary's Place	8/7/2013	11:00	24	74	--

*See Exhibit 3.12-3

^a Noise sites from Supplemental Draft EIS and/or Final EIS measurements conducted July and August 2013.

^b Noise sites from Draft EIS measurements conducted March 2010.

^c Noise site from Final EIS measurement conducted May 2015.

^d L_{dn} is used for FTA Category 2 (residential) land use and L_{eq} is used for Category 3 (institutional land use).

^e Site-specific outdoor-indoor noise measurements conducted at these locations to determine the reduction in noise due to the building for interior spaces.

EXHIBIT 3.12-3

Existing Noise Measurement Locations in Eden Prairie, Minnetonka and Hopkins

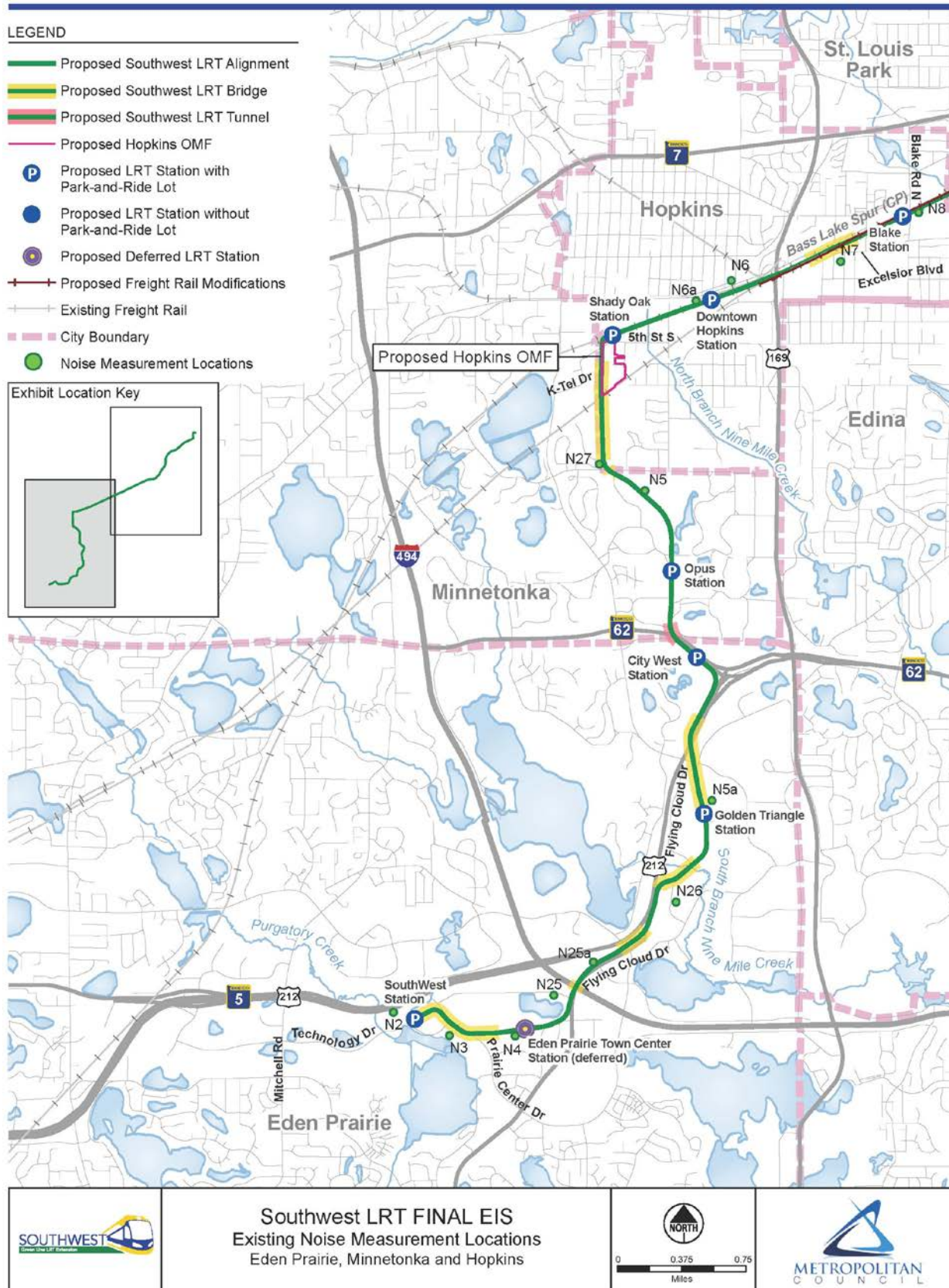


EXHIBIT 3.12-4

Existing Noise Measurement Locations in St. Louis Park and Minneapolis

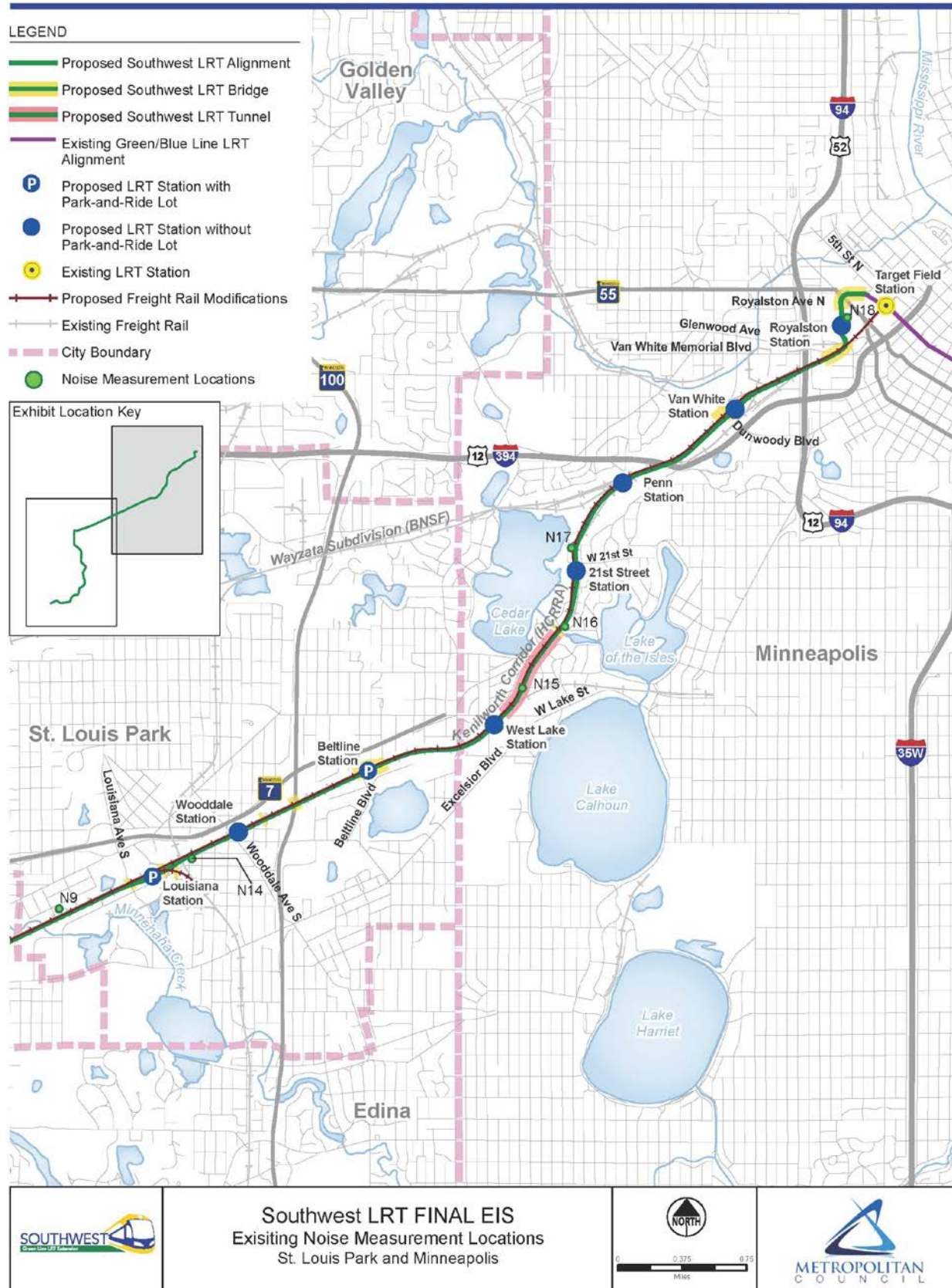


EXHIBIT 3.12-5

Noise Impact Locations without Mitigation in Eden Prairie, Minnetonka, and Hopkins

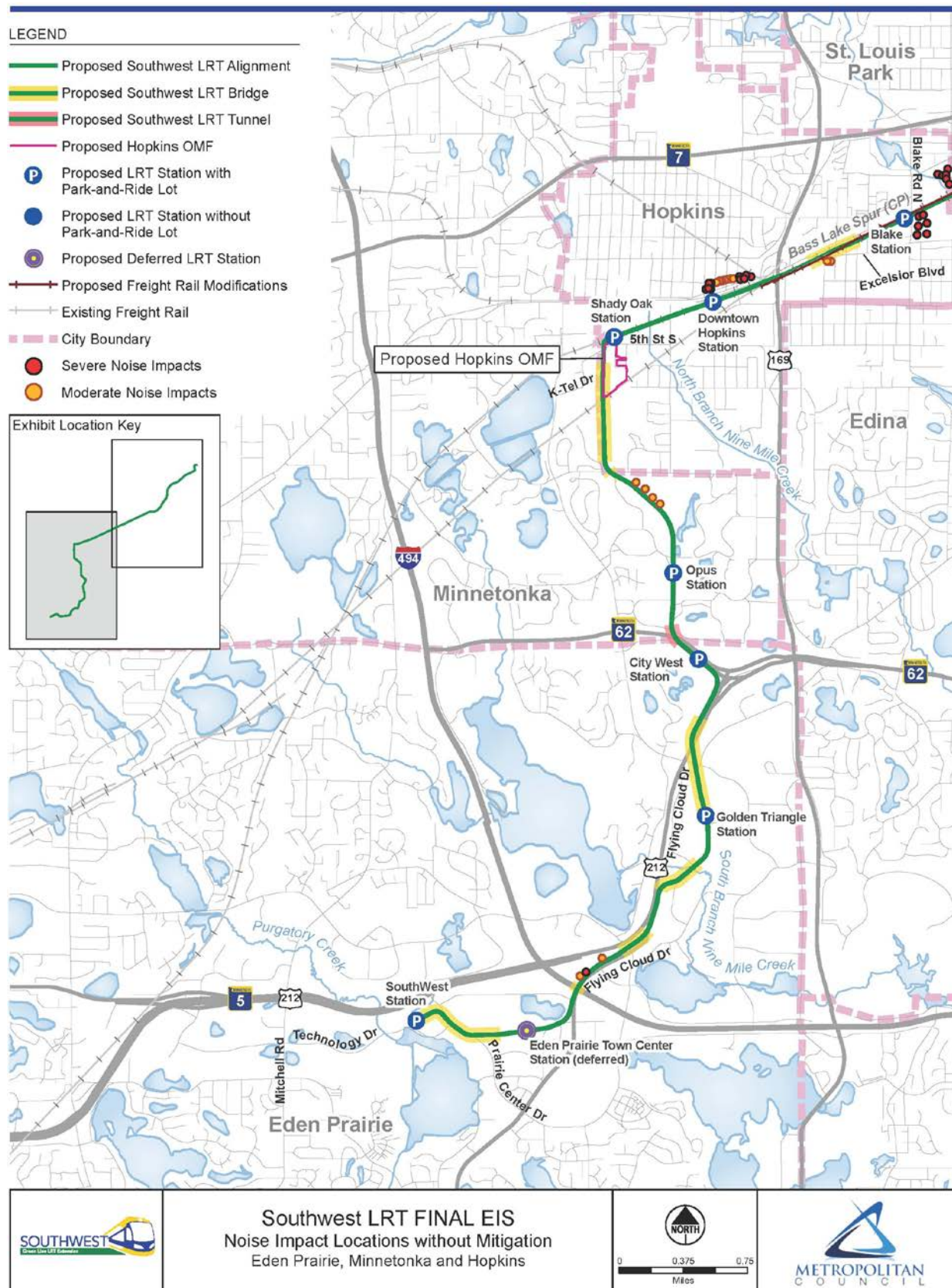


EXHIBIT 3.12-6

Noise Impact Locations without Mitigation in St. Louis Park and Minneapolis

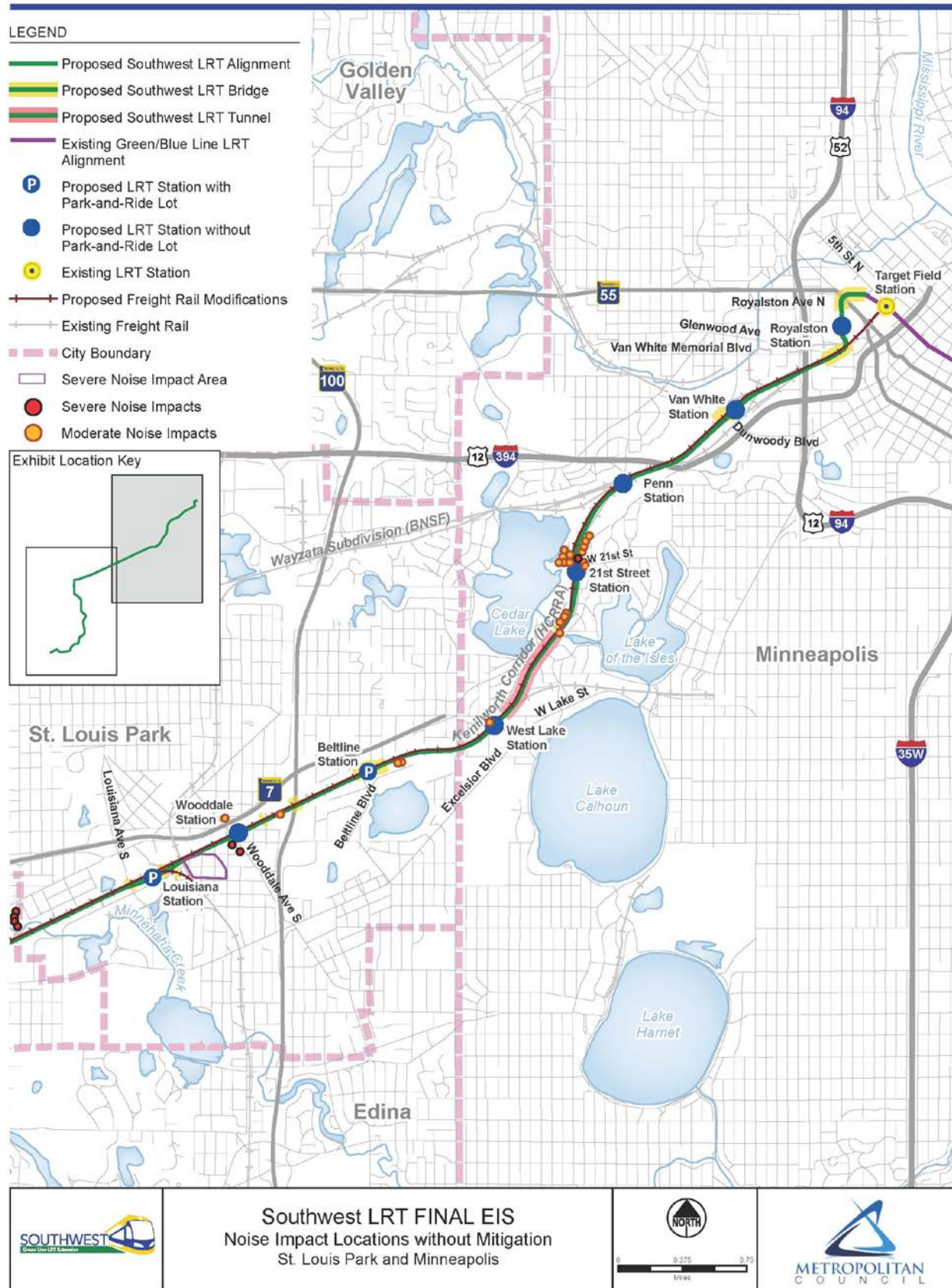


TABLE 3.12-5

Summary of Noise Assessment and Impacts for Category 2, Residential Land Use (without mitigation)

Location	City	Side of Track	Distance from near LRT Track Centerline (feet)	LRT Speed (mph)	Existing Noise Level, Ldn (dBA) ^a	Project Noise Levels, Ldn (dBA) ^a			Type and # of Impacts	
						Project	FTA Impact Criteria			
							Mod	Sev	Mod	Sev
Southwest Station Condos	Eden Prairie	W	125	20	71	62	65	70	0	0
Water Tower Apartments	Eden Prairie	E	100	35	62	55	59	64	0	0
Lincoln Parc Apartments	Eden Prairie	E	125	25	62	58	59	64	0	0
Extended Stay America	Eden Prairie	W	470	40	61	48	58	64	0	0
Town Place Suites	Eden Prairie	E	550	40	61	46	58	64	0	0
Residence Inn	Eden Prairie	W	40	40	61	65	58	64	1 bldg	1 bldg
Baymont Inn	Eden Prairie	W	80	40	61	61	58	64	1 bldg	0
Marriott	Eden Prairie	E	500	40	61	48	58	64	0	0
Claremont Apartments	Minnetonka	E	80	45	57	58	56	62	4 bldgs (126 units)	0
Greenfield Apartments	Hopkins	E	200 ^b	55	57	54	56	62	0	0
Deer Ridge	Minnetonka	E	300	55	57	56	56	62	0	0
Parkside Apartments	Hopkins	W	780	65	65	46	61	66	0	0
Mayfair Apartments	Hopkins	W	720	65	65	47	61	66	0	0
11th Avenue	Hopkins	W	640	65	65	48	61	66	0	0
Royal Apartments	Hopkins	W	610	65	65	48	61	66	0	0
Hopkins Plaza Apartments	Hopkins	W	350	20	65	71	61	66	0	5 bldgs (71 units)
7th Avenue	Hopkins	W	430	35	65	66	61	66	2	0
Sonoma Apartments	Hopkins	W	350	45	65	66	61	66	1 bldg (12 units)	0
6th Avenue	Hopkins	W	400	45	65	65	61	66	5	0
Town Terrace Apartments	Hopkins	W	250	55	65	68	61	66	0	5 bldgs (68 units)
Monroe Avenue	Hopkins	E	200	55	58	59	57	63	2	0
Westside Apartments	Hopkins	E	125	35	60	78	58	63	0	6 bldgs (171 units)
Creekwood Estates	Hopkins	W	270	55	57	68	56	62	0	6 bldgs (72 units)
Edgebrook Drive	St. Louis Park	W	250	55	57	53	56	62	0	0

Location	City	Side of Track	Distance from near LRT Track Centerline (feet)	LRT Speed (mph)	Existing Noise Level, Ldn (dBA) ^a	Project Noise Levels, Ldn (dBA) ^a			Type and # of Impacts	
						Project	FTA Impact Criteria			
							Mod	Sev	Mod	Sev
Railroad Avenue	St. Louis Park	E	50	55	58	82	57	62	0	42 bldgs (44 units)
Village in the Park Condos	St. Louis Park	E	150	35	65	76	61	66	0	2 bldgs (64 units)
TowerLight	St. Louis Park	E	355	20	65	73	61	66	0	1 bldg (66 units)
35th Street Apartments	St. Louis Park	W	540	35	65	65	61	66	1 bldg (16 units)	0
Hoigaard Village	St. Louis Park	E	50	55	65	64	60	66	1 bldg (32 units)	0
Cityscape Apartments	St. Louis Park	W	125	55	65	58	60	66	0	0
Park Glen Townhomes	St. Louis Park	E	113	45	65	61	60	66	16	0
Inglewood Trails Apartments	St. Louis Park	W	250	45	65	51	60	66	0	0
Ewing Avenue South	Minneapolis	W	100	45	65	57	60	66	0	0
Lake Citihomes	Minneapolis	W	88	20	65	62	60	66	1 bldg (7 units)	0
Chowen Avenue South	Minneapolis	E	75	35	65	58	60	66	0	0
St. Louis Avenue	Minneapolis	W	63	45	65	57	60	66	0	0
Benton Boulevard	Minneapolis	E	88	45	61	55	58	64	0	0
South Upton Avenue	Minneapolis	E	100	45	61	57	58	64	0	0
Thomas Lane	Minneapolis	E	130	35	56	53	56	62	0	0
Burnham Road South	Minneapolis	W	100	45	61	56	58	64	0	0
Burnham Road North	Minneapolis	W	50	45	61	63	58	64	5	0
Thomas Avenue South	Minneapolis	E	50	35	56	66	56	62	3	1
Sheridan Avenue South	Minneapolis	E	135	45	56	59	56	62	3	0
South Upton Avenue	Minneapolis	W	125	40	56	57	56	62	6	0
Kenwood Parkway	Minneapolis	E	140	45	56	54	56	62	0	0
Catholic Charities	Minneapolis	W	50	55	74	63	65	72	0	0
Mary’s Place	Minneapolis	E	40	20	74	60	65	72	0	0
Total Buildings/(Units):									52/237	69/558

^a The Project noise level and the existing noise level are independent values. The existing noise level represents the current noise without the Project. The Project noise level is the noise from the Southwest LRT Project only (not the future noise level), which is used to determine impact. Because they are independent values, the Project noise can be higher or lower than the existing noise.

^b The distance measurement provided represents a building with the greatest increase (change) in noise levels over ambient conditions. There is another building within the complex where the distance from the LRT alignment is closer than this distance (approximately 125 feet); however, the noise level increase at that building is lower so the distance provided (approximately 200 feet) is representative of the noise level increase at this location.

Notes:

The "Type and # of Impacts" column identifies whether the LRT noise level exceeds FTA's moderate or severe noise impact criteria thresholds, which are found under the "Project Noise Levels" column. It also reports the number of buildings or units that experience a moderate or severe noise impact.

The "Project Noise Levels" column represents the highest noise level at each location.

The impact assessment at the Water Tower and Lincoln Parc Apartments includes the deferred Eden Prairie Town Center Station. Under both conditions, with or without the Eden Prairie Town Center Station, there are no impacts at the two locations.

The reported noise levels are rounded to the nearest decibel.

Acronyms: bldg = building; Mod = moderate; Sev = severe.

As shown in Table 3.12-6, the Project will result in one moderate noise impact at the Kenilworth Channel. The Kenilworth Channel was assessed as a Category 3 land use, which represents parks and other similar uses. The lagoon bank at the Kenilworth Channel was assessed as a Category 1 land use, which represents locations with very high sensitivity to noise. A summary of the noise impacts is contained in Appendix K.

TABLE 3.12-6

Summary of Noise Impacts for Category 3, Institutional Land Use (without mitigation)

Location	City	Side of Track	Distance from near LRT Track Centerline (feet)	LRT Speed (mph)	Existing Noise Level, Leq (dBA)	Project Noise Levels, Leq (dBA)			Type and # of Impacts	
						Project	Criteria			
							Mod	Sev	Mod	Sev
Purgatory Creek Park ^b	Eden Prairie	W	270	25	54	47	60	66	0	0
Fox 9 Studios	Eden Prairie	E	450	45	61	45	58	64	0	0
Eagle Ridge Academy	Eden Prairie	E	225	35	65	51	66	71	0	0
ShopHQ Outdoor Studio	Eden Prairie	E	100	35	53	52	54	60	0	0
Sunrise International Montessori School	Minnetonka	E	300	40	65	49	66	71	0	0
Hearing Care Specialists (Audiologist)	Hopkins	E	70	35	See Appendix K				0	0
Lilac Park ^b	St. Louis Park	W	150	55	56	53	61	66	0	0
Kenilworth Channel	Minneapolis	E	20	45	54	64	60	66	1	0
Kenilworth Lagoon Bank ^a	Minneapolis	E	200	45	54	54	55	61	0	0
Total:									1	0

^a This receptor was analyzed as a Category 1 land use.

^b Passive use identified within park, see Appendix K for more information.

Notes:

The reported noise levels are rounded to the nearest decibel.

The sensitive use area of Open Space B in Minnetonka is outside the distance where there is the potential for impact (250 feet) and was not included in the assessment.

Mod = moderate; Sev = severe

3.12.3.2 Long-term Indirect Impacts from Noise

Some indirect noise impacts are likely to occur in the long-term, because of the anticipated increase in development density anticipated around the light rail stations. Local jurisdictions will likely take advantage of better transportation and access following completion of the project by encouraging transit-oriented development/redevelopment of land around the stations, which will result in noise exposure produced by

light rail equipment and park-and-ride facilities. Conversely, an increase in light rail ridership is likely to reduce roadway traffic noise elsewhere in the communities served by light rail.

3.12.3.3 Short-term Impacts from Noise

This section describes the short-term (construction) noise impacts.

Construction noise levels are subject to local noise ordinances and noise rules administered by the MPCA (Minnesota Rules Chapter 7030). MPCA administers these noise rules to establish maximum allowable noise levels; where applicable, MPCA procedures allow for the issuance of noise variances. To address both the applicable local noise ordinances and the MPCA noise rules, the Council will develop a Noise Control Plan. The Noise Control Plan will contain information regarding when advanced notice of construction activities will be provided to affected communities. The Noise Control Plan will also contain other stipulations to help avoid or minimize construction noise impacts. For example, the Noise Control Plan will require that construction equipment used by contractors be properly muffled and in proper working order. Most of the construction will consist of site preparation and laying new tracks, which should occur primarily during daytime hours, except when required and allowable within local noise ordinance procedures.⁶⁹ Construction noise varies greatly depending on the type of construction activities (see Section 2.1.1.3), equipment used, staging of the construction process, the layout of the construction site and the distance to sensitive receptors. Elevated noise levels during construction are, to a degree, unavoidable for this type of project, and short-term noise during construction of the Project can be intrusive to residents near the construction sites. For most construction equipment, diesel engines are typically the dominant noise source. For other activities, such as impact pile driving and jackhammering, noise generated by the actual process dominates. At some locations, more extensive work will occur, such as pile driving for elevated structures and retaining walls, vibratory hammers, and hydraulic “press-in” machinery for excavation support installation and excavation for the tunnels in the Kenilworth Corridor and at Highway 62. Typically, the contractor will provide specific information on equipment and methods as a part of the noise control plan for construction on the Project.

As previously noted, construction will occur within daytime hours, but night construction may sometimes be required, for example to minimize traffic impacts or to improve safety. If nighttime construction is deemed necessary, a nighttime construction mitigation plan will be developed during the Project’s final design and construction stages.

For residential land use, short-term at-grade track construction noise impact can extend to approximately 120 feet from the construction site. However, if nighttime construction is conducted, short-term noise impacts from at-grade construction can extend to approximately 380 feet from the construction site. See Appendix K for more information on the construction noise impact assessment.

See Section 3.12.4.2 for more information regarding the approach to construction noise mitigation.

3.12.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project’s long-term and short-term noise impacts.

For long-term operational noise, the Project will never exceed the MPCA standards and no mitigation will be required under the standards. The FTA criteria and mitigation methods for long-term operational noise are more protective than the MPCA standards and have been used to determine mitigation locations. FTA guidance states that severe operational noise impacts need to be mitigated, unless there are no feasible or practical means to do so (FTA, 2006). For moderate impacts, discretion and project-specific factors are used when considering mitigation. The project-specific factors can include both the existing noise levels and the projected increase in noise levels (e.g., 3 dB above existing noise level); the types and number of noise-sensitive land uses with impacts; existing sound insulation of buildings; and the cost-effectiveness of providing noise mitigation. The Project will mitigate severe and moderate impacts, where the existing noise

⁶⁹ Approval of a noise-related waiver from the applicable local jurisdiction may also be required for some nighttime construction to occur.

levels exceed 65 dBA Ldn or where there is an increase in noise due to the Project of three dB or greater, where *reasonable and feasible*. Greater detail on the mitigation methodology is included in Appendix K and Appendix D.

For short-term construction noise impacts, the Project is subject to local noise ordinances and, based on coordination with MPCA, local noise ordinances are reasonable measures intended to protect against violations of the MPCA noise standards.

3.12.4.1 Long-term Mitigation Measures

Impact. LRT horns and bells at high speed and/or FRA shared crossings, proximity to the light rail alignment, proximity to rail crossovers, and the presence of and proximity to elevated light rail structures.

Mitigation. Several noise mitigation measures have been evaluated based on the source, path or receiver, which are further described in Appendix K. Additionally, Table 3.12-7 provides a summary of the mitigation measures that will be implemented. At select locations, more detailed descriptions of the noise mitigation measures are provided in Appendix K.

In addition to the specific noise mitigation measures listed below, the Project will employ several best practice methods to minimize noise project-wide. These measures include using wheel skirts (panels over the wheels) to reduce wheel/rail noise and continuously welded rail to eliminate gaps in the tracks that generate additional noise. Wheel truing (to keep the wheels smooth and round) and rail grinding (to remove corrugations) will also be conducted on a regular basis, which helps to control the noise and vibration levels for the system. Where appropriate and as needed, lubrication may be employed to limit noise. Throughout the design process noise generating elements (e.g., crossovers) have been located, where possible, away from sensitive locations. Finally, the quiet zones identified below would also have the added benefit of eliminating horn blowing from the existing freight trains in the corridor.

The results shown in Table 3.12-7 indicate that residential noise impacts that meet the thresholds for mitigation (outlined Appendix K), will be eliminated with the noted mitigation measures. At several locations, the mitigation threshold is not met; therefore, mitigation is not included and residual noise impacts will occur at the respective locations. Quiet zones allow for the use of LRV bells instead of horns at at-grade crossings and will eliminate most noise impacts. Additionally, quiet zones, if implemented, will have the added benefit of eliminating the sounding of freight horns.

3.12.4.2 Short-term Mitigation Measures

Impact. Temporary noise impacts from construction activities.

Mitigation. A detailed Noise Control Plan will be prepared for the Project's construction duration. A noise control engineer or acoustician will work with the contractor(s) to prepare the plan in conjunction with the contractor's specific equipment and methods of construction. Key elements of this plan will include:

- Contractor's specific equipment types
- Schedule and methods of construction
- Maximum noise limits for each piece of equipment with certification testing
- Prohibitions on certain types of equipment and processes during the nighttime hours without local agency coordination and approved variances
- Identification of specific sensitive sites where near construction sites
- Methods for determining construction noise levels
- Implementation of noise control measures where appropriate
- Include a 24-hour construction hotline

TABLE 3.12-7

Summary of Mitigation Measures and Residual Impacts for Residential and Institutional Locations

Location	City	Side of Track	Moderate Impacts without Mitigation	Severe Impacts without Mitigation	Noise Level Increase (dB) ^a	Mitigation Measure ^{b, c}	Residual Impacts	
							Mod	Sev
Residence Inn	Eden Prairie	W	1 bldg	1 bldg	5.9	Sound insulation improvements at nearest building	0	0
Baymont Inn	Eden Prairie	W	1 bldg	0	3.0	Interior noise levels meet interior criterion – No mitigation required	0	0
Claremont Apartments	Minnetonka	E	4 bldgs (126 units)	0	3.7	8' high noise barrier extending 1,800 feet	0	0
Hopkins Plaza Apartments	Hopkins	W	0	5 bldgs (71 units)	6.6	Quiet zone eliminating LRT horns, LRT bells only	0	0
7th Avenue	Hopkins	W	2	0	3.5	Quiet zone eliminating LRT horns, LRT bells only	0	0
Sonoma Apartment	Hopkins	W	1 bldg (12 units)	0	3.7	Quiet zone eliminating LRT horns, LRT bells only	0	0
6th Avenue	Hopkins	W	5	0	3.2	Quiet zone eliminating LRT horns, LRT bells only	0	0
Town Terrace Apartments	Hopkins	W	0	5 bldgs (68 units)	4.7	Quiet zone eliminating LRT horns, LRT bells only	0	0
Monroe Avenue	Hopkins	E	2	0	3.2	3' high parapet barrier extending 500 feet on elevated structure over Excelsior Boulevard	0	0
Westside Apartments	Hopkins	E	0	6 bldgs (171 units)	17.4	Quiet zone eliminating LRT horns, LRT bells only	0	0
Creekwood Estates	Hopkins	W	0	6 bldgs (72 units)	12.1	Quiet zone eliminating LRT horns, LRT bells only	0	0
Railroad Avenue	St. Louis Park	E	0	42 bldgs (44 units)	24.0	Quiet zone eliminating LRT horns, LRT bells only + 8' to 11' noise barrier extending 760 feet	0	0
Village in the Park Condos	St. Louis Park	E	0	2 bldgs (64 units)	12.0	Quiet zone eliminating LRT horns, LRT bells only	0	0
TowerLight	St. Louis Park	E	0	1 bldg (66 units)	8.8	Quiet zone eliminating LRT horns, LRT bells only	0	0
35th Street Apartments	St. Louis Park	W	1 bldg (16 units)	0	3.0	Quiet zone eliminating LRT horns, LRT bells only	0	0
Hoigaard Village	St. Louis Park	E	1 bldg (32 units)	0	2.3	No mitigation required ^d	1 bldg (32 units)	0
Park Glen Townhomes	St. Louis Park	E	16	0	1.5	No mitigation required ^d	16	0
Lake CitiHomes	Minneapolis	W	1 bldg (7 units)	0	1.8	No mitigation required ^b	1 bldg (7 units)	0

Location	City	Side of Track	Moderate Impacts without Mitigation	Severe Impacts without Mitigation	Noise Level Increase (dB) ^a	Mitigation Measure ^{b, c}	Residual Impacts	
							Mod	Sev
Kenilworth Channel	Minneapolis	E/W	1	0	7.2	2' high parapet wall and rail dampers 300'	0	0
Burnham Road North	Minneapolis	W	1	0	4.4	Interior testing ^e	0	0
Burnham Road North	Minneapolis	W	4	0	2.9	No mitigation required ^d	4	0
Thomas Avenue South	Minneapolis	E	3	1	8.4	Wayside bell eliminating one impact, plus interior testing ^e	0	0
Sheridan Avenue South	Minneapolis	E	3	0	3.7	Wayside bell	0	0
South Upton Avenue	Minneapolis	W	6	0	3.6	Wayside bell	0	0
Total:			52/238	69/558			22/59	0

^a The noise level increase represents the total change in noise level (without mitigation) from the existing to the future noise level with the introduction of the Project.

^b If the noise mitigation guidelines, as contained in the Regional Transitway Guidelines (March 2016) (see Appendix D), are found to not meet reasonable criterion or if the property owner(s) does not approve sound insulation, the Project will result in additional residual noise impacts.

^c Quiet zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented by the Project and consistent with quiet zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of quiet zones. If the municipality fails to apply for a quiet zone or FRA fails to approve the quiet zone, the Project may result in residual noise impacts.

^d The moderate impacts at these locations do not meet the threshold for mitigation (e.g., impact does not meet 3-dB increase threshold) as defined in the Regional Transitways Guidelines (March 2016) (see Appendix D).

^e The Council has determined that a noise barrier at these locations would not meet the noise mitigation guidelines for reasonable and feasible criteria contained in the Regional Transitway Guidelines (March 2016) (see Appendix D). As such, no noise barrier will be constructed to mitigate impacts to these residences. Final determination of mitigation measures for these residences will be assessed with on-site testing to determine if the residences meet the interior noise level criteria (defined in Appendix K). Based on the results, the Council will identify the noise mitigation to be implemented for these residences during Engineering and once on-site measurements are completed. If an exceedance of interior noise level is identified at these locations, the Council will work with property owners on applicable mitigation. This could include implementation of sound insulation, which would still require approval by the property owner(s).

3.13 Vibration

This section describes the long-term direct and indirect and short-term (construction) direct and indirect vibration effects of the Project (see Sections 3.17 for cumulative impacts). This section provides an overview of the regulatory context and methodology used for the analysis; an assessment of existing vibration conditions; a description of the anticipated impacts related to vibration; and a description of mitigation measures, as applicable, to implement with the Project. A technical report has been prepared in support of this section (see Appendix K).

3.13.1 Regulatory Context and Methodology

This section describes the approach that was used to forecast vibration impacts for the Final EIS and to develop vibration mitigation strategies. Vibration has been assessed in accordance with guidelines specified in the FTA's *Transit Noise and Vibration Impact Assessment* guidance manual (FTA, 2006).

The FTA guidance manual on noise and vibration is the primary source for the vibration methodology. The Final EIS uses a Detailed Vibration Assessment methodology, as described in Chapter 11 of the FTA guidance manual. The Southwest LRT Draft EIS used the FTA General Vibration Assessment methodology, as described in Chapter 10 of the FTA guidance manual; therefore, the Final EIS vibration results are much more precise

and reflect the actual soil conditions and vehicle characteristics, as opposed to the estimates used in the Draft EIS.

The Detailed Vibration Assessment involved the following steps:

- Identify vibration-sensitive land uses in the corridor using aerial photography, GIS data, and field surveys, typically within 300 feet of the alignment.
- Measure vibration-propagation characteristics of the soil in the corridor at sensitive receptors (see Section 3.13.2.2).
- Forecast project vibration levels from transit operations and information on speeds, headways, track type, and vehicle vibration characteristics. Details regarding the information used to predict future project vibration levels can be found in Appendix K.
- Assess the impact from transit by comparing the Project vibration forecasts with the FTA vibration impact criteria in Chapter 8 of the FTA guidance manual.
- Recommend mitigation at locations where project vibration levels exceed FTA impact criteria.

3.13.1.1 Understanding Vibration

Ground-borne vibration is the motion of the ground transmitted into a building that can be described in terms of displacement, velocity or acceleration. Vibration velocity is used in transit and freight rail, and is defined by the following:

- **Level.** Vibration is expressed in terms of vibration velocity level, using vibration decibels (VdB), with a reference of one micro-inch per second. The level of vibration represents how much the ground is moving. The threshold of human perception to transit and freight rail vibration is approximately 65 VdB, and annoyance begins to occur for frequent events at vibration levels over 70 VdB.
- **Frequency.** Vibration frequency is expressed in Hertz (Hz). Human response to vibration is typically from about six Hz to 200 Hz.
- **Time Pattern.** Environmental vibration changes all the time and human response is roughly correlated to the number of vibration events during the day. The more events that occur, the more sensitive humans are to the vibration.

Exhibit 3.13-1 illustrates typical ground-borne vibration levels for transit and freight projects, as well as the corresponding human and structural responses to vibration.

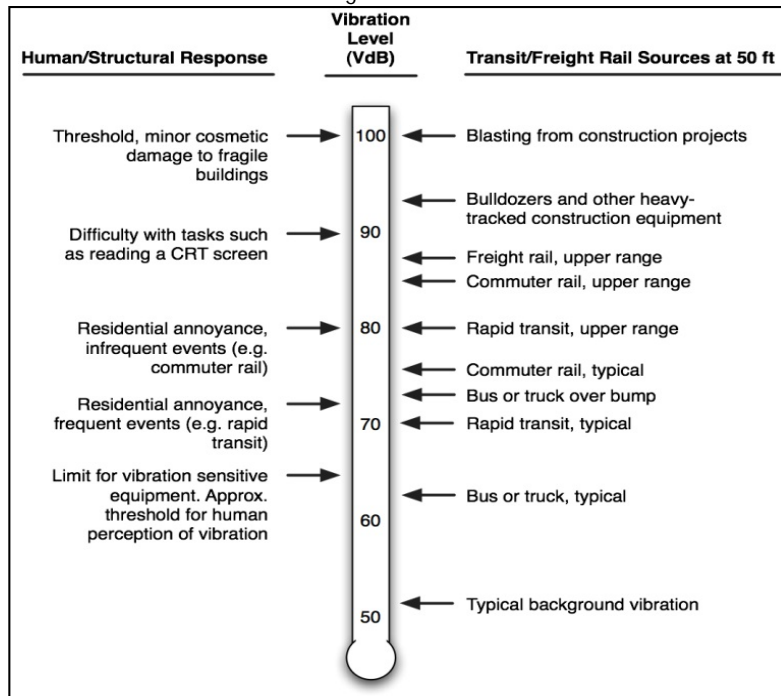
Ground-borne noise is a low-frequency noise that is radiated from the motion of room surfaces, such as walls and ceilings in buildings, due to ground-borne vibration. Ground-borne noise is defined in terms of dBA, which emphasizes middle and high frequencies, which are more audible to human ears.

3.13.1.2 Vibration Criteria

The vibration impact criteria used for the assessment are based on the information contained in Chapter 8 of the FTA noise and vibration guidance manual. The criteria for a general vibration assessment are based on land use and train frequency, as shown in Table 3.13-1. Some buildings, such as concert halls, recording studios, and theaters, can be especially sensitive to vibration (or ground-borne noise) but do not fit into the three categories listed in Table 3.13-1. Because of the sensitivity of these buildings, special attention is paid to these buildings during the vibration assessment. Table 3.13-2 shows the FTA criteria for acceptable levels of vibration for several types of special buildings.

EXHIBIT 3.13-1

Vibration Levels from LRT and Freight Rail



Source: FTA, 2006.

TABLE 3.13-1

Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for General Assessment

Land Use Category	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch/sec)			Ground-Borne Noise Impact Levels (dBA re 20 micro Pascals)		
	Frequent Events ^a	Occasional Events ^b	Infrequent Events ^c	Frequent Events ^a	Occasional Events ^b	Infrequent Events ^c
Category 1: Buildings where vibration will interfere with interior operations.	65 ^d	65 ^d	65 ^d	N/A ^e	N/A ^e	N/A
Category 2: Residences and buildings where people normally sleep.	72	75	80	35	38	43
Category 3: Institutional land uses with primarily daytime use.	75	78	83	40	43	48

^a "Frequent Events" are defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

^b "Occasional Events" are defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.

^c "Infrequent Events" are defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

^d This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

^e Vibration-sensitive equipment is generally not sensitive to ground-borne noise.

Source: FTA, 2006.

TABLE 3.13-2

Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for Special Buildings

Type of Building or Room	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch/sec)		Ground-Borne Noise Impact Levels (dBA re 20 micro Pascals)	
	Frequent Events ^a	Occasional or Infrequent Events ^b	Frequent Events ^a	Occasional or Infrequent Events ^b
Concert Halls	65	65	25	25
TV Studios	65	65	25	25
Recording Studios	65	65	25	25
Auditoriums	72	80	30	38
Theaters	72	80	35	43

^a "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

^b "Occasional or Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.

If the building will rarely be occupied when the trains are operating, there is no need to consider impact. As an example, consider locating a commuter rail line next to a concert hall. If no commuter trains will operate after 7 pm, it should be rare that the trains interfere with the use of the hall.

Source: FTA, 2006.

Tables 3.13-1 and 3.13-2 include additional criteria for ground-borne noise, which is a low-frequency noise that is radiated from the motion of room surfaces, such as walls and ceilings in buildings due to ground-borne vibration. Ground-borne noise is defined in terms of dBA, which emphasizes middle and high frequencies, which are more audible to human ears. The criteria for ground-borne noise are much lower than for airborne noise to account for the low-frequency character of ground-borne noise. However, because airborne noise typically masks ground-borne noise for aboveground (at-grade or elevated) transit systems, ground-borne noise is only assessed for operations in tunnels, such as in the Kenilworth Corridor, where airborne noise is not a factor, or at locations such as recording studios, which are well insulated from airborne noise.

The criteria for a Detailed Vibration Assessment are illustrated on Exhibit 3.13-2, and descriptions of the curves are shown in Table 3.13-3. The curves on Exhibit 3.13-2 are applied to the predicted vibration spectrum for the transit project. If the vibration level at any one frequency exceeds the criteria, there is an impact. Conversely, if the predicted vibration spectrum of the transit project is below the curve, there will be no impact.

For the Southwest LRT Project, the general vibration assessment criteria are used to assess light rail ground-borne noise in the tunnel section. The detailed vibration assessment criteria will be used to assess light rail ground-borne vibration.

3.13.2 Affected Environment

This section describes vibration-sensitive land uses and existing vibration measurements within the Project study area.

3.13.2.1 Vibration-Sensitive Land Uses

Vibration-sensitive land uses for the Final EIS were identified based on aerial photography, project drawings, project outreach to businesses to identify sensitive uses within buildings, and a site survey. Information regarding vibration-sensitive land uses by city can be found in Appendix K.

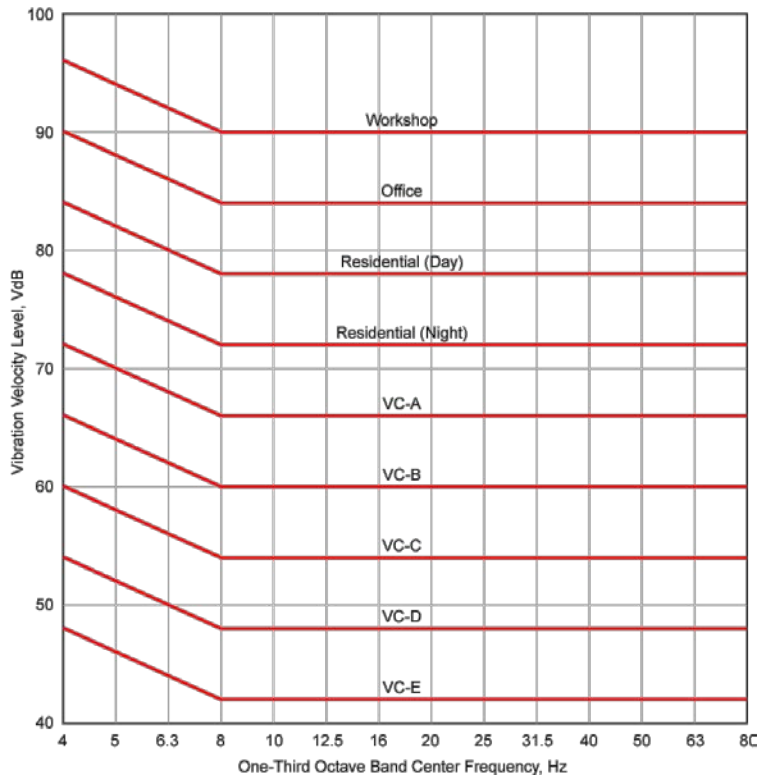
3.13.2.2 Existing Vibration Measurements

Vibration measurements, conducted at select sites in July 2013 and August 2015, were used to characterize the response of soil and/or building foundations along the project corridor. At each site, vibration propagation tests were conducted by impacting the ground with an instrumented weight and measuring the response of the soil and/or the building foundations at various distances. The results of the vibration propagation tests were combined with the force density (vehicle input force) to predict vibration levels from the operations of light rail vehicles at representative locations along the proposed light rail alignment.

The locations of the ten vibration measurement sites are shown in Table 3.13-4 and on Exhibits 3.13-3 and 3.13-4. Additional information regarding the existing vibration measurements is described in Appendix K.

EXHIBIT 3.13-2

Detailed Vibration Criteria



Source: FTA, 2006.

TABLE 3.13-3

Interpretation of Vibration Criteria for Detailed Analysis

Criterion Curve (See Exhibit 3.13-2)	Max Level (VdB) ^a	Description of Use
Workshop	90	Distinctly feelable vibration. Appropriate to workshops and non-sensitive areas.
Office	84	Feelable vibration. Appropriate to offices and non-sensitive areas.
Residential Day	78	Barely feelable vibration. Adequate for computer equipment and low-power optical microscopes (up to 20X).
Residential Night, Operating Rooms	72	Vibration not feelable, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power optical microscopes (100X) and other equipment of low sensitivity.
VC-A	66	Adequate for medium- to high-power optical microscopes (400X), microbalances, optical balances, and similar specialized equipment.
VC-B	60	Adequate for high-power optical microscopes (1000X), inspection and lithography equipment to 3 micron line widths.
VC-C	54	Appropriate for most lithography and inspection equipment to 1 micron detail size.
VC-D	48	Suitable in most instances for the most demanding equipment, including electron microscopes operating to the limits of their capability.
VC-E	42	The most demanding criterion for extremely vibration-sensitive equipment.

^a As measured in one-third-octave bands of frequency over the frequency range eight to 80 Hz.

Source: FTA, 2006.

EXHIBIT 3.13-3

Vibration Propagation Measurement Locations and Vibration Impact Locations without Mitigation, Eden Prairie, Minnetonka and Hopkins

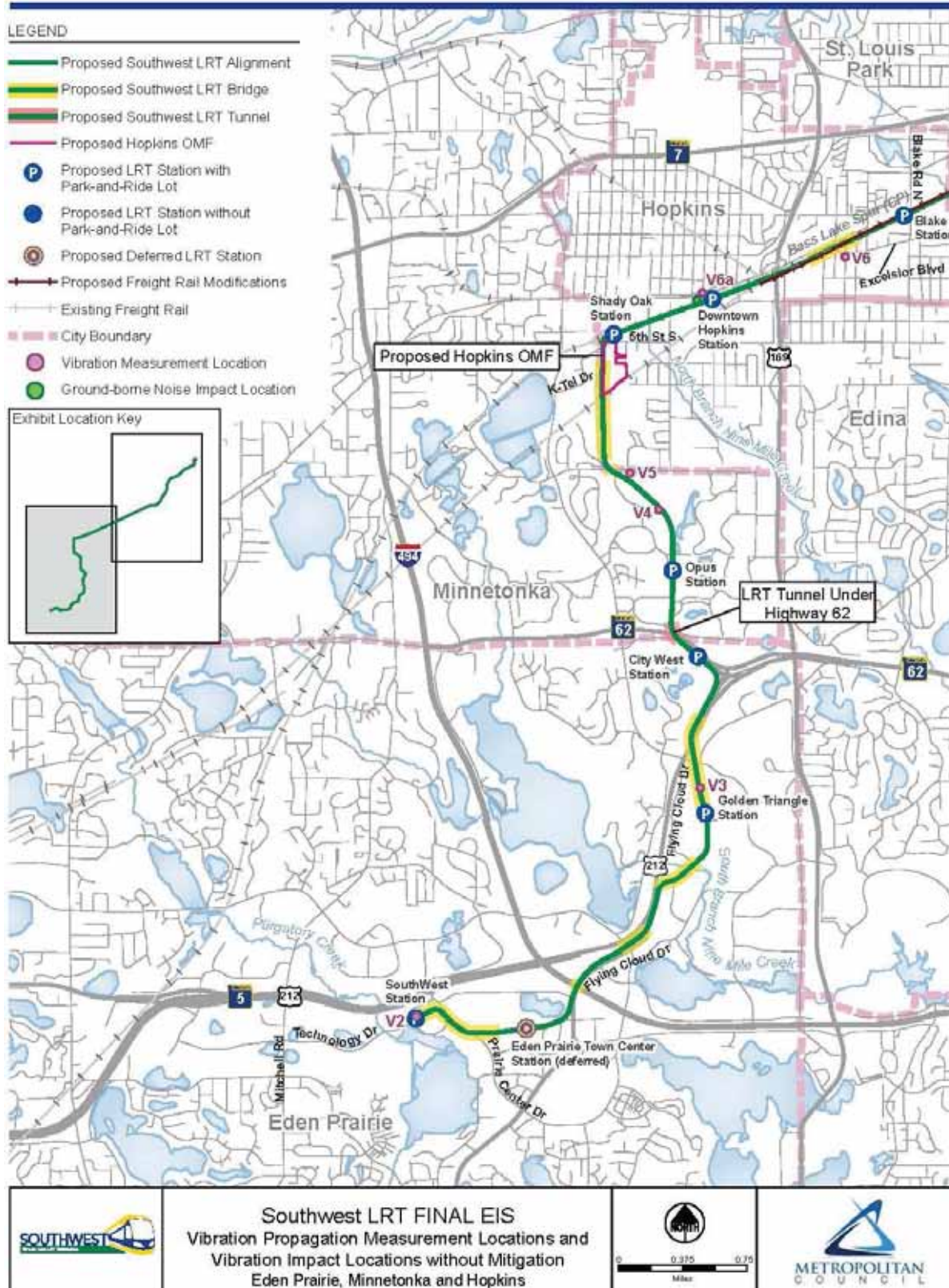


EXHIBIT 3.13.4

Vibration Propagation Measurement Locations and Vibration Impact Locations without Mitigation, St Louis Park and Minneapolis

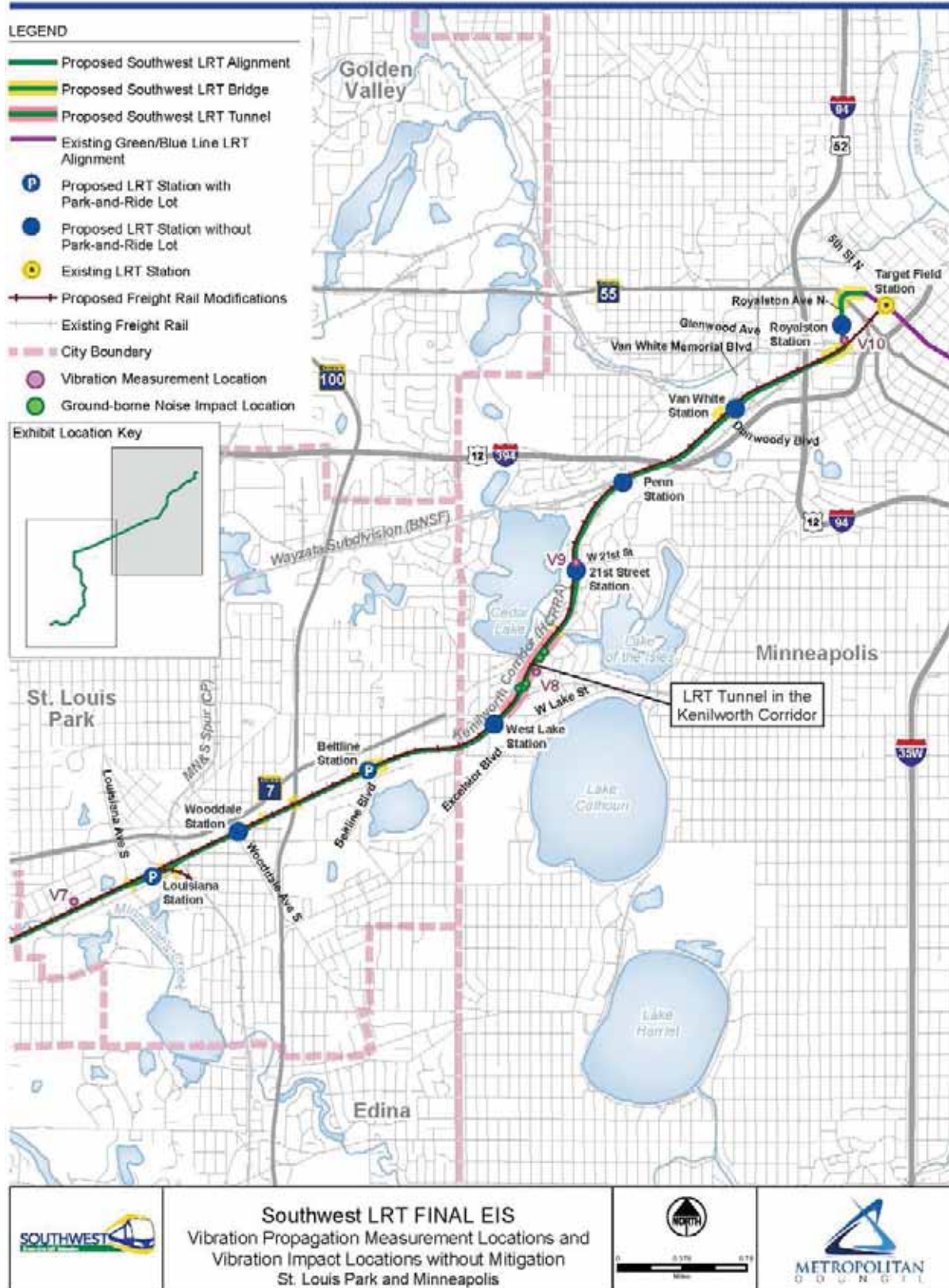


TABLE 3.13-4

Vibration Propagation Measurement Locations

Site No. ^a	City	Measurement Location	Type	Date
V2	Eden Prairie	SouthWest Transit Station	Vibration Propagation	July 2013
V3	Eden Prairie	ShopHQ	Site-specific Building	July 2013
V4	Minnetonka	AMS	Site-specific Building	July 2013
V5	Minnetonka	Claremont Apartments	Vibration Propagation	July 2013
V6a	Hopkins	Hearing Care Specialists	Site-specific Building	August 2015
V6	Hopkins	Jackson Avenue South	Vibration Propagation	July 2013
V7	St. Louis Park	Edgebrook Drive	Vibration Propagation	July 2013
V8	Minneapolis	Dean Ct and W 28th Street	Vibration Propagation	July 2013
V9	Minneapolis	21st Street	Vibration Propagation	July 2013
V10	Minneapolis	Royalston Avenue	Vibration Propagation	July 2013

^a The vibration measurement Site V1 (Eaton) was at a location that was eliminated from the Project during Project Development and is not a part of the current project.

Source: Cross Spectrum Acoustics, Inc., 2015.

3.13.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect vibration and ground-borne noise impacts from the Project (see Section 2.1.1.2 for a description of construction activities); this includes short-term vibration impacts.

3.13.3.1 Long-term Direct Impacts from Vibration

Project Vibration Levels Assessment

This section describes the long-term direct vibration impacts. The project team conducted a Detailed Vibration Analysis (see Appendix K for more information). Analysis results are summarized in Tables 3.13-5 and 3.13-6 for residential and institutional (e.g., churches and schools) land uses, respectively. The tables include a tabulation of location information for each sensitive receptor group, the predicted future vibration level, the FTA impact criteria, and the number of vibration impacts at each location, without the implementation of mitigation measures.

As shown in Table 3.13-5, the project will result in no vibration impacts for residential land uses (Exhibit 3.13-2). The tunnel slab in the Kenilworth Corridor eliminates the vibration impacts relative to an LRT tunnel system with no slab in the same segment of the corridor.

A general assessment of freight vibration was also conducted for the area near the Kenilworth Channel where the freight tracks will be shifted closer to sensitive receptors to provide room for the LRT tracks. The results of the assessment indicated that there would be no vibration impacts from freight trains due to the shift in freight tracks, due primarily to the very low speeds of the freight trains. More information regarding the freight vibration assessment can be found in Appendix K.

TABLE 3.13-5

Summary of Vibration Assessments and Impacts for Residential Land Uses (without mitigation)

Location	City	Side of Track	Distance from LRT Track Centerline (feet)	LRT Speed (mph)	Max Vibration Velocity Level (VdB) in any 1/3-Octave Band		# of Impacts
					Project	FTA Impact Criterion	
Southwest Station Condominiums	Eden Prairie	W	125	20	51	72	0
Water Tower Apartments	Eden Prairie	E	100	35	56	72	0
Lincoln Parc Apartments	Eden Prairie	E	125	25	53	72	0
Residence Inn	Eden Prairie	W	40	45	63	72	0
Baymont Inn	Eden Prairie	W	80	45	59	72	0
Claremont Apartments	Minnetonka	E	80	45	57	72	0
Greenfield Apartments	Hopkins	E	200	55	46	72	0
Deer Ridge Apartments	Minnetonka	W	250	55	46	72	0
Town Terrace Apartments	Hopkins	W	300	55	55	72	0
Monroe Avenue	Hopkins	E	200	55	46	72	0
Westside Apartments	Hopkins	E	125	35	55	72	0
Creekwood Estates	Hopkins	W	160	55	56	72	0
Edgebrook Drive	St. Louis Park	W	250	55	54	72	0
Railroad Avenue	St. Louis Park	E	50	55	69	72	0
Hoigaard Village	St. Louis Park	E	50	55	62	72	0
Cityscape Apartments	St. Louis Park	W	125	55	58	72	0
Park Glen Townhomes	St. Louis Park	E	113	45	66	72	0
Inglewood Trails Apartments	St. Louis Park	W	250	45	55	72	0
Ewing Avenue South	Minneapolis	W	100	45	56	72	0
Lake CitiHomes	Minneapolis	W	88	20	54	72	0
Chowen Avenue South	Minneapolis	E	75	35	57	72	0
St. Louis Avenue	Minneapolis	W	44	45	57	72	0
Calhoun Isle Condos	Minneapolis	E	43	45	57	72	0
Dean Court	Minneapolis	E	45	45	57	72	0
Xerxes Avenue South	Minneapolis	E	45	45	57	72	0
Benton Boulevard	Minneapolis	E	43	45	57	72	0
Thomas Lane	Minneapolis	E	130	45	56	72	0
Burnham Road South	Minneapolis	W	102	45	56	72	0
Burnham Road North	Minneapolis	W	50	45	65	72	0
Thomas Avenue South	Minneapolis	E	50	35	62	72	0
Sheridan Avenue South	Minneapolis	E	130	45	54	72	0
South Upton Avenue	Minneapolis	W	125	40	54	72	0
South Upton Avenue	Minneapolis	E	100	45	57	72	0
Kenwood Parkway	Minneapolis	E	140	45	60	72	0
Catholic Charities	Minneapolis	W	50	55	65	72	0
Mary's Place	Minneapolis	E	40	20	57	72	0
Total:							0

The vibration levels for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower. The threshold of human perception to LRT and freight rail vibration is approximately 65 VdB or less, and annoyance begins to occur for frequent events at vibration levels over 70 VdB.

The impact assessment at the Water Tower and Lincoln Park Apartments includes the deferred Eden Prairie Town Center. If the station is not built by 2040, there will continue to be no impacts at these locations.

VdB = vibration velocity level is reported in decibels relative to a level of one micro-inch per second.

Impact Criterion = the threshold for a vibration impact under FTA guidance.

As shown in Table 3.13-6, the proposed project will result in no vibration impacts for institutional land uses (Exhibit 3.13-2).

TABLE 3.13-6

Summary of Vibration Impacts for Institutional Land Uses (without mitigation)

Location	City	Side of Track	Distance from LRT Track Centerline (feet)	LRT Speed (mph)	Max Vibration Velocity Level (VdB) in any 1/3-Octave Band		# of Impacts
					Project Vibration Level	FTA Impact Criterion	
Access Genetics	Eden Prairie	E	125	25	53	72	0
Eagle Ridge Academy	Eden Prairie	E	225	35	42	75	0
Sunrise International Montessori School	Minnetonka	E	300	40	52	75	0
American Medical Systems	Minnetonka	W	70	45	58	72	0
Total							0

The vibration levels for each location are the highest levels projected for that location. Vibration projections at other receptors within each location will be lower. The threshold of human perception to LRT and freight rail vibration is approximately 65 VdB or less, and annoyance begins to occur for frequent events at vibration levels over 70 VdB.

VdB = vibration velocity level is reported in decibels relative to a level of one micro-inch per second.

Impact Criterion = the threshold for a vibration impact under FTA guidance.

Project Ground-Borne Noise Impact

This section describes the long-term direct ground-borne impacts for the Project. The project team conducted a Detailed Vibration Analysis (see Appendix K for more information). Analysis results are summarized in Tables 3.13-7 and 3.13-8 for residential and institutional (e.g., churches and schools) land uses, respectively. The tables include a tabulation of location information (ground-borne noise is only assessed for tunnels and for locations such as studios) for each sensitive receptor group, the predicted future ground-borne noise levels, the impact criteria, and whether there will be ground-borne noise impacts. The tables also show the total number of ground-borne noise impacts for each location, without potential mitigation measures.

As shown in Table 3.13-7, the proposed project will result in ground-borne noise impacts at 54 units (five buildings) for residential land uses in the tunnel section south of the Kenilworth Channel (Exhibit 3.13-2). The tunnel slab, a project features within the Kenilworth Corridor significantly reduces the number and magnitude of the ground-borne noise impacts relative to a tunnel without a slab within the same segment of the corridor.

As shown in Table 3.13-8, the proposed project will result in no impact at the Shop HQ studios (Exhibit 3.13-2). However, there is a ground-borne noise impact projected at the Hearing Care Specialists site in Hopkins; the impact is due to exceedances of the hearing threshold criteria for the sound testing booth inside the audiologist office. Additional information regarding the ground-borne noise impact at this location can be found in Appendix K.

3.13.3.2 Long-term Indirect Impacts from Vibration

Some indirect changes in vibration levels are likely in the long-term with the Project due to the anticipated increase in development density around light rail stations. Local jurisdictions will likely take advantage of better transportation and access following completion of the Project by encouraging transit-oriented development/redevelopment of land around the stations, which will result in exposure to vibrations produced by LRT and freight rail.

TABLE 3.13-7

Summary of Ground-borne Noise Assessments and Impacts for Residential Land Use (without mitigation)

Location	City	Side of Track	Distance from LRT Track Centerline (feet)	LRT Speed (mph)	Ground-Borne Noise Level (dBA)		# of Impacts
					Project Ground-Borne Noise Level	FTA Impact Criterion	
St. Louis Avenue	Minneapolis	W	44	45	37	35	1 bldg (3 units)
Calhoun Isle Condos	Minneapolis	E	43	45	37	35	1 bldg (36 units)
Dean Court	Minneapolis	E	45	45	37	35	1 bldg (6 units)
Xerxes Avenue South	Minneapolis	E	45	45	37	35	1 bldg (8 units)
Benton Boulevard	Minneapolis	E	43	45	37	35	1 unit
Burnham Road South	Minneapolis	W	102	45	25	35	0
Total							5 bldgs (54 units)

The ground-borne noise levels for each location are the highest levels projected for that location. Ground-borne noise projections at other receptors within each location will be lower. Ground-borne noise at the impact criterion of 35 dBA or less is generally acceptable to people for sleeping areas. Ground-borne noise levels are only assessed for tunnel sections.

TABLE 3.13-8

Summary of Ground-borne Noise Assessments and Impacts for Institutional Land Use (without mitigation)

Location	City	Side of Track	Distance from LRT Track Centerline (feet)	LRT Speed (mph)	Ground-Borne Noise Level (dBA)		# of Impacts
					Project Ground-Borne Level	Impact Criterion	
Shop HQ	Eden Prairie	E	100	35	17	25	0
Hearing Care Specialists (Audiologist)	Hopkins	E	See discussion below				1
Total							1

3.13.3.3 Short-term Impacts from Vibration

Vibration related to construction activities (see Section 2.1.1.3) will result from the operation of heavy equipment (pile driving, vibratory hammers, hoe rams, vibratory compaction, and loaded trucks) needed to construct bridges, retaining walls, roads, and park-and-ride facilities. Most limits on construction vibration are based on reducing the effects on nearby structures. Although construction vibrations are temporary, it is appropriate to assess the potential for human annoyance and damage.

Most of the buildings along the project corridor are typical engineered concrete and masonry, or reinforced-concrete, steel or timber construction. In order to provide screening distances for potential monitoring of construction vibration throughout the corridor, a vibration criterion of 102 VdB was used (see Appendix K for more information on construction vibration), and 72 VdB was used to assess the potential for vibration annoyance from construction activities. With the exception of impact pile driving, most of the distances for potential monitoring are within 30 feet of construction activities. The distance for the potential for damage to buildings from impact pile driving is up to 40 feet. See Appendix K for more information on the construction vibration impact assessment.

3.13.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term vibration and ground-borne noise impacts.

3.13.4.1 Long-term Mitigation Measures (Vibration)

No mitigation measures are warranted for long-term direct or indirect impacts from vibration due to the absence of any corresponding impacts.

3.13.4.2 Long-term Mitigation Measures (Ground-borne Noise)

Impact. Ground-borne noise impacts due to ground-borne vibration.

Mitigation (Kenilworth Tunnel). Highly resilient rail fasteners in the tunnel section (approximately 2,200 feet) to eliminate ground-borne noise impacts. The fasteners will be designed to provide at least 5 dB of reduction in vibration levels at 80 Hz and higher. See Appendix K for more information.

Mitigation (Hearing Care Specialists [Audiologist]). Replace the existing vibration isolation elements between the floor of the building and the sound booth. The vibration isolation (rubber pads or springs) will have a resonance frequency no greater than 40 Hz and should provide at least 10 dB of reduction in vibration levels at 80 Hz and higher.

3.13.4.3 Short-term Mitigation Measures

Impact. Temporary construction vibration.

Mitigation. The most effective methods for minimizing the impact from construction vibration is to limit the use of high-vibration activities, such as impact pile driving and vibratory rolling, and to include vibration limits in the construction specifications. To mitigate vibration impacts from construction activities, the following measures will be applied, where feasible:

- **Limit Construction Hours.** Limit high-vibration activities at night.
- **Construction Specifications.** Include limits on vibration in the construction specifications, especially at locations where high-vibration activities.
- **Alternative Construction Methods.** Minimize the use of impact and vibratory equipment, where possible and appropriate.
- **Truck Routes.** Use truck haul routes that minimize exposure to sensitive receptors and minimizes damage to roadway surfaces, where appropriate.
- **Pre-Construction Survey.** Perform pre-construction surveys to document the existing conditions of the structures in the vicinity of sites where high-vibration construction activities will be performed.
- **Vibration Monitoring.** If a construction activity has the potential to exceed the damage criteria at any building, the contractor will be required to conduct vibration monitoring and, if the vibration exceeds the limit, the activity must be modified or terminated.

3.14 Hazardous and Contaminated Materials

This section describes long-term direct and indirect, and short-term (construction) direct and indirect effects of hazardous and contaminated materials resulting from the Project (see Section 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis; a description of existing conditions relative to known or suspected hazardous and contaminated materials; a description of anticipated impacts related to hazardous and contaminated materials, and a description of mitigation measures to implement with the Project.

3.14.1 Regulatory Context and Methodology

This section describes regulatory context and methodology for the hazardous and contaminated material evaluation. This section includes a summary of relevant laws and executive orders, an overview of the methodology, and a description of the study area for the hazardous and contaminated material analysis.

The primary federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). RCRA provides for regulation of wastes, as well as regulating underground storage tanks (USTs), which are a common source of contamination. The purpose of CERCLA, often referred to as Superfund, is to clean up contaminated sites to protect public health and the environment. Other relevant federal laws and regulations include the Community Environmental Response Facilitation Act of 1992; Clean Water Act (1972); Clean Air Act (as amended 1990); Safe Drinking Water Act (as amended 1996); Hazardous Waste Operations and Emergency Response regulations (29 CFR 1910.120 and 29 CFR 1926.65); the Toxic Substances Control Act (as amended 2002); and the Federal Insecticide, Fungicide, and Rodenticide Act (as amended 1988).

The Minnesota Pollution Control Agency (MPCA) oversees the federal and state regulations pertaining to contaminated soil, groundwater, and waste cleanup plan approvals; petroleum UST registration and removal; and National Pollutant Discharge Elimination System (NPDES) permitting.⁷⁰ In addition, the Minnesota Department of Health regulates asbestos abatement. Activities that encounter contaminated materials must follow state requirements for safe handling and disposal under the purview of the MPCA. The Occupational Safety and Health Agency (OSHA) specifies federal guidelines for worker safety and health during construction activities.

The analysis of long-term direct and indirect effects includes an evaluation of the potential for soil and groundwater contamination resulting from the operation of the light rail vehicles and related facilities (i.e., operations and maintenance facilities). It also describes the potential for long-term direct and indirect impacts due to soil and groundwater contamination, and the control or cleanup requirements for the project due to potential for hazardous and contaminated materials to be mobilized or released from project activities.

The analysis of short-term direct and indirect effects evaluates the potential risk or likelihood of encountering hazardous and contaminated materials onsite during construction (i.e., Tier 1 sites) or those that have the potential to migrate through the soil or groundwater from nearby sites (i.e., Tier 2 sites), based on the results of the Phase I and Phase II Environmental Site Assessments (ESA)⁷¹ conducted for the Southwest LRT Project. Tier 1 sites will be directly disturbed by construction activities, resulting in short-term direct impacts. Tier 2 sites have contaminated materials which have the potential to migrate to the area of construction through the soil or groundwater, resulting in short-term indirect impacts.

The Phase I ESAs consisted of a review of the following: regulatory databases by a national information vendor; a review of available site reports; a windshield survey; site reconnaissance; interviews with local government officials and watershed district representatives; and a review of historical fire insurance maps, aerial photographs, and topographic maps. The Phase I ESAs identify sites where there is a high, medium, or low risk or likelihood to encounter hazardous and contaminated materials. Phase II ESAs were conducted in areas within or adjacent to high- and medium-risk sites where new right-of-way will be purchased and/or

⁷⁰ Under a memorandum of agreement with the USEPA, dated May 2, 1995, the Minnesota Pollution Control Agency (MPCA) is designated the lead agency for voluntary investigation and cleanup program (VIC) sites.

⁷¹ In 2013, Phase I Environmental Site Assessments (ESAs) were conducted for the Project as defined in the Draft EIS. In 2014 and 2015, additional Phase I ESAs were conducted for the adjustments to the Project incorporated since publication of the Draft EIS. Phase II ESAs were completed based on the results of the Phase I ESAs in 2015. Refer to the Hazardous and Contaminated Materials Evaluation Supporting Documentation (see Appendix C for instructions on how to access supporting documentation).

where construction activities are anticipated to occur as a result of the Project. The Phase II ESAs further evaluate site-specific risks and identify actions to minimize or avoid the risks.

There is no single comprehensive source of information available that identifies known or potential sources of environmental contamination. Therefore, to identify and evaluate sites potentially containing hazardous or regulated materials (such as petroleum products) or other sources of potential contamination, a governmental database search was conducted as part of the Phase I ESA work described above. This screening tool identified locations of sites with known or potential environmental liabilities based on information contained in various state government databases, including the *What's In My Neighborhood* internet sites maintained by the MPCA and the Minnesota Department of Agriculture. The databases reviewed are as follows:

- MPCA databases:
 - ***Leaking Underground Storage Tank (LUST)***. Database containing records of active and closed investigations of leaking underground storage, subsurface tank storage incidents, and petroleum releases.
 - ***Master Entity System (MES)***. Database containing many specific databases, including:
 - *Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)*. Database containing locations of Superfund sites that the state is dealing with or has dealt with.
 - *National Priority List (NPL)*. Database containing locations of known releases or threatened releases of hazardous substances throughout the United States.
 - ***Permanent List of Priorities (PLP)***. Database containing locations of state Superfund sites in Minnesota where investigation and cleanup are needed, cleanup is underway, or cleanup has been completed and long-term monitoring or maintenance continues.
 - ***Voluntary Investigation and Cleanup Program (VIC)***. Database containing records for sites enrolled in the VIC.
 - ***Resource Conservation and Recovery Act (RCRA)***. Database containing records of facilities, unpermitted dump sites, and no further remedial action planned (NFRAP) sites.
- Minnesota Department of Agriculture database:
 - ***Agricultural Chemical Incidents***. Database containing locations of agricultural chemical spill and investigation sites, including active and closed spill sites, and the locations of pesticide and herbicide investigations.

The study area for the hazardous and contaminated materials analysis is based on the review area for the Phase I ESAs, which generally includes an area extending 550-feet on either side of the proposed light rail alignment.⁷² At a minimum, parcels that fell wholly or partially within the hazardous and contaminated materials study area were assessed; however, historical documentation and environmental database review extended beyond this area where appropriate for more inclusive results.

3.14.2 Affected Environment

This section describes the hazardous and contaminated materials that could be located on parcels that will be disturbed by construction of the Project (i.e., including parcels directly impacted and parcels in close proximity to construction activities where there is potential for contaminated materials to migrate to the

⁷² The proposed OMF in the City of Hopkins (see Section 2.1.1) is adjacent to the proposed light rail alignment and all of the parcels that will be acquired for the OMF fall wholly or partially within the 550-foot review area of the light rail alignment.

area of construction through the soil or groundwater). This section describes the affected environment, or existing conditions for the hazardous and contaminated materials study area, and provides context for evaluation of potential short-term (construction) related impacts. Construction impacts are most likely to occur in locations where there is a medium- or high-risk of hazardous and contaminated materials present. Refer to Section 3.14.3.3 for more information on short-term (construction) impacts.

The assessment of potential contaminated sites described in this section is based on the Phase I ESAs completed for this project (see Section 3.14.1). Each of the sites identified through the Phase I ESAs were designated as having high, medium, or low risk potential for soil and/or groundwater contamination using the following definitions:

- **High Risk.** These sites include all active and inactive VIC and Minnesota Environmental Response and Liability Act sites; all active and inactive dump sites; and all active LUST sites.
- **Medium Risk.** These sites include all closed LUST sites, all sites with USTs or aboveground storage tanks, all sites with vehicle repair activities, and all sites with historical demolitions.
- **Low Risk.** These sites include small hazardous waste generators.

Phase I Environmental Site Assessment Sites

The Phase I ESAs identified 396 sites that could potentially affect or be affected by the Southwest LRT Project. Of these, 99 sites are considered to be high risk, 245 sites are identified as medium risk, and 52 sites are considered low risk. Table 3.14-1 provides a summary of the known high, medium, and low risk hazardous/regulated materials sites identified within the hazardous and contaminated materials study area, by municipality. These sites are illustrated within the Phase I ESA reports (refer to the Hazardous and Contaminated Materials Evaluation Supporting Documentation; see Appendix C for instructions on how to access supporting documentation).

TABLE 3.14-1

Hazardous and Contaminated Materials Sites, by Municipality and Level of Risk

Level of Risk	Municipality				
	Eden Prairie	Minnetonka	Hopkins	St. Louis Park	Minneapolis
High Risk	10	3	19	18	49
Medium Risk	52	26	38	63	66
Low Risk	12	1	6	8	25
Total	74	30	63	89	140

Sources: Short Elliott Hendrickson Inc., *Modified Phase I Environmental Site Assessment, Southwest Light Rail Transit – Segment 3* (2013). Short Elliott Hendrickson Inc., *Modified Phase I Environmental Site Assessment, Southwest Light Rail Transit – Segment 4* (2013). Short Elliott Hendrickson Inc., *Modified Phase I Environmental Site Assessment, Southwest Light Rail Transit – Segment A and Freight Rail Co-location* (2013). Short Elliott Hendrickson Inc., *Modified Phase I Environmental Site Assessment, Southwest Light Rail Transit – Switching Wye* (2014). Short Elliott Hendrickson Inc., *Modified Phase I Environmental Site Assessment, Southwest Light Rail Transit – Eden Prairie* (2014). Short Elliott Hendrickson Inc., *Modified Phase I Environmental Site Assessment, Southwest Light Rail Transit – Minneapolis Adjustments* (2015).

The following describes the general context of the hazardous and contaminated materials study area, moving along the proposed light rail alignment from southwest to northeast. These descriptions include the identification of areas of concern as identified in the Phase I ESAs completed for this project. Areas of concern generally consist of locations where known hazardous and contaminated materials exist and may consist of one or more of the potential hazardous and contaminated material sites identified in the Phase I ESA site identification process. See Table 3.14-1 for a summary of sites per risk category by municipality and see the Phase I ESA reports listed in the Hazardous and Contaminated Materials Evaluation Supporting

Documentation (see Appendix C) for more detailed information on and an illustration of the location of each site.⁷³

In **Eden Prairie**, at the western terminus of the proposed light rail alignment, the hazardous and contaminated materials study area consists of mostly commercial and light industrial sites, with interspersed retail shops, residences, apartments, condominiums, and recreational paved trails. The majority of potentially contaminated sites identified in Eden Prairie were originally developed as agricultural fields. Many sites included historical structures and previously low-lying/marshy sites that were filled for development. All of the identified sites sustained surface disturbances at some point in their history, and numerous sites with historic surface disturbances are suspected of having had historic dumping. The majority of site listings include small to minimal quantity hazardous waste generators. The former Best Buy Headquarters [sites 514 and 517] is an area of concern for hazardous and contaminated materials.

Moving northeast to **Minnetonka**, the hazardous and contaminated materials study area is located in an area consisting of mostly commercial sites with interspersed retail shops, residences, apartments, and condominiums, as well as recreational paved trails. The majority of the present-day structures along the Project in Minnetonka were constructed after 1960 on former farm fields and scattered ponds or marshy ground.

In **Hopkins**, the hazardous and contaminated materials study area overlaps with an active freight railway. There are a variety of environmental concerns associated with railroads and from property uses directly associated with railroad activities and surrounding industry. Common railroad facilities include paint shops, car and locomotive washing facilities, foundries, gas works, creosoting plants, fuel storage, battery shops, and laundries. Railroad property is often contaminated with heavy metals and polycyclic aromatic hydrocarbons (PAH) associated with the transport of coal and other industrial products. In addition, railroads are known to use chemicals associated with controlling encroaching vegetation along the railroad.

Properties adjacent to the Project in Hopkins include heavy/light industrial, commercial, and retail businesses with pockets of residential and multi-tenant dwellings. The area also includes former railways, which have been converted into trails. This includes portions of the Bass Lake Spur and Minneapolis Northfield and Southern (MN&S) Railroad, as well as the Minnesota River Bluffs and Cedar Lake trails. Areas of concern include the Hopkins Sanitary Landfill [site 402], the former Honeywell facilities [sites 008 and 407], the Hopkins Tech Center [site 006], and Napco [site 012].

Moving east along the proposed light rail alignment, the Phase I ESA identified the St. Louis Park/Edina/Hopkins Groundwater Plume, generally between Highway 169 in Hopkins and Highway 100 [sites 034, 038-118] as an area of concern. Volatile organic compounds (VOCs) and benzene soil vapors associated with the plume have been identified. Known and potential sources of the solvent plume are identified as machine shops and related industrial land uses between Louisiana Avenue and Wooddale Avenue. The chlorinated solvent plume affects surficial glacial drift aquifers, as well as the Prairie du Chien/Jordan and St. Peter bedrock aquifers. Groundwater analytical results identified tetrachloroethene (PCE), trichloroethene (TCE), 1,2-dichloroethene (DCE), and vinyl chloride as the contaminants of concern in groundwater.

In addition, soil vapors were identified in residential areas adjacent to industrial sites between Louisiana Avenue and Wooddale Avenue. Soil vapor samples collected within the hazardous and contaminated materials study area indicate maximum benzene and VOC detections at approximately 10 times and 1,000 times the screening values, respectively. One particular area of concern is located within the

⁷³ Areas of concern were identified within the Phase 1 ESA reports. These areas may encompass all or part of one or multiple high, medium, and low risk sites as identified in preliminary site identification process. Refer to Contaminated Materials Evaluation Supporting Documentation (see Appendix C for instructions on how to access supporting documentation).

hazardous and contaminated materials study area [site 094], southeast of the intersection of Oxford Street and Edgewood Avenue South.

In **St. Louis Park**, the hazardous and contaminated materials study area is generally aligned with current single-track active railways and former railways, which have been converted into trails, including portions of the Bass Lake Spur, the MN&S Spur, and the Cedar Lake Trail. Properties adjacent to the railway within St. Louis Park include primarily industrial and commercial structures with areas of residential homes and multi-dwelling structures. The MN&S Spur intersects the Bass Lake Spur east of Louisiana Avenue in St. Louis Park. Canadian Pacific Railway currently uses the MN&S Spur for local industry trains, primarily for rail cars going to various Bloomington industries. The service is approximately one train each direction five days per week (SEH, 2013c). The Twin Cities & Western (TC&W) Railroad has operating rights in this area.

During the site reconnaissance conducted as part of the ESA process, it was observed that portions of the railways within St. Louis Park are built up with nonnative fill material, and many areas of dirt piles and tree stumps were observed adjacent to commercial/industrial sites along the railway. The fill in these areas is of unknown origin and there is the potential for the fill to be contaminated and contain debris. Many of these areas were investigated during the Phase II ESA process and the extent of the existing contamination was verified. In general, these railroad corridors are characterized by “Unregulated Fill” and “Urban Fill.” Unregulated fill is defined as uncontaminated material based on MPCA definitions, and urban fill is defined as widespread low-level contaminated material typical of historic urban/industrial areas with key indicator parameters (metals, PAHs) and debris indicating a diffuse anthropogenic origin. The majority of urban fill in the Project area also includes mixed railbed fill material. Areas of unregulated and urban fill will be managed in accordance with the approved Project Response Action Plans (RAP) (see Section 3.14.4). Areas of note, where the elevation of the track was approximately five to 20 feet higher than the adjacent properties (indicating fill was used), include the following locations⁷⁴ (Portions of the railroad listed below are described by north-south-running roadways within the project corridor. These roadways may or may not intersect the railway):

- The portion of railroad (sites 017 and 018) between 15th Avenue South and 11th Avenue South (10 feet)
- The portion of railroad (sites 061, 062, 063, 064, 066, 067, 069, and 070) between Blake Road North and Woodland Drive (five to 15 feet)
- The portion of railroad (sites 069, 070, 072, 073, 074, 076, 077, 078, 081, 082, 084, 085, 086, and 093) between Woodland Drive and the BNSF Railway crossing near Edgewood Avenue South (15 to 20 feet)

In addition to hazardous and contaminated materials from railroad activities, many low-lying areas in the City of St. Louis Park were filled with solid waste or urban fill and reclaimed or developed. The former Reilly Tar/Republic Creosoting Works plant site (located west of Louisiana Avenue, south of 32nd Street, east of Pennsylvania Avenue, and north of Walker Street) is one site that has been redeveloped since onsite industrial dumping ceased. The Reilly site totaled approximately 80 acres of land; however, plant-associated operations affecting soil and/or groundwater extended beyond the boundaries previously established by the Superfund program. From 1918 to 1972, the site operated as a coal tar distillation facility and wood preserving plant. Reilly’s primary production was creosote, and it also treated railroad ties, timbers, poles, piling, and other heavy-duty products. The Reilly site has since been redeveloped as a city park, condominiums, and business center. The chemical compounds associated with these onsite processes are PAH, phenolics and pentachlorophenol (PCP). Based on the investigations conducted as part of the Phase I ESA, an onsite well was contaminated with these materials, which penetrated the Mt. Simon/Hinckley Aquifer (approximately 900 feet below the ground surface). In addition, wastes containing coal tar and its

⁷⁴ Refer to the Phase I ESA reports listed in the Hazardous and Contaminated Materials Evaluation Supporting Documentation (see Appendix C for instructions on how to access supporting documentation) for an illustration of the location of each site.

distillation byproducts were discharged over the ground surface into a network of ditches that emptied into a peat bog south of the site. Although the former Reilly site is outside of the hazardous and contaminated materials study area and wasn't investigated as an ESA site, there is an approximately 1,000-acre contaminated groundwater plume associated with this site that reaches into the hazardous and contaminated materials study area.

The National Lead Industries site (also known as Taracorp/Golden Auto) is also located in the City of St. Louis Park, in the southeast quadrant of Louisiana Avenue and Highway 7 [site 086]. The site was a metal refining and re-fabricating site listed for the following wastes: sulfates, dissolved solids, lead, battery fragments, lead-bearing debris, and slag. The source of onsite contamination was the discharge of liquid waste through the process sewers, which ran to the municipal sewer system. Groundwater and offsite soil associated with the National Lead Industries site may be contaminated. A lead smelter was active on about 10 acres of the site from the 1930s to August 1979. Large amounts of lead slag from the plant's early operations were buried on portions of the site. Air monitoring conducted by the state in 1979 revealed that lead standards were frequently violated when the plant was in operation, which is believed to be a concern for other properties in the area. The site has been delisted from the NPL, the Minnesota PLP, and the CERCLA database.⁷⁵

Continuing east, the hazardous and contaminated materials study area in Minneapolis is generally aligned with an active railroad in the vicinity of four former rail yards that have since been redeveloped with industrial/commercial properties and recreational parks and trails. Historic uses include heavy industrial/machining, bulk fuel storage facilities, and other uses. Properties along the hazardous and contaminated materials study area in Minneapolis include primarily heavy/light industrial, commercial and retail businesses with recreational facilities/grounds on the west side; outdoor storage/stockpiling on the east side; and residential and recreational properties in southwest Minneapolis, with several wooded, residential, and recreational areas and beaches adjacent to Cedar Lake. Currently, Hennepin County Regional Railroad Authority owns the adjacent Kenilworth Corridor, which has one track that TC&W uses to access the BNSF Wayzata Subdivision track and other railroads in the Twin Cities.

The hazardous and contaminated materials study area parallels the BNSF Railway track after both crossovers of the I-394 corridor in Minneapolis. This area includes the current City of Minneapolis rock crushing and outdoor storage areas, a bus garage, and an impound lot, as well as Xcel and CenterPoint Energy facilities. Historic features include the Bassett Creek/Irving Avenue Dump and rail yard, fuel companies/storage facilities, machine/repair shops, fuel stations, painting operations, and other facilities. The former Bassett Creek/Irving Avenue Dump is a Superfund site (site 315). This area also has listings for EPA Brownfield sites (sites 315 and 323), cleanup sites (sites 348, 352, and 355), and other sites. The Bassett Creek/Irving Avenue Dump Superfund site was added to the EPA PLP because of debris-containing fill material up to 20 feet below the ground surface, and because of PAH and VOC impacts on soil, soil gas, and groundwater.

The portion of the hazardous and contaminated material study area within downtown Minneapolis has undergone major redevelopment in the past five to 10 years, and redevelopment continues through the present. The Northstar Commuter Rail, the existing Target Field Station (serving the existing Green and Blue light rail lines), Hennepin Energy Recovery Center, and the Target Field Stadium are among the most recent construction activities with recent or ongoing projects in state/federal regulatory programs. Private properties surrounding these public facilities have also undergone recent or current redevelopment. This general area is known to have historic/present debris, metals, VOCs, PAH, and benzo(a)pyrene equivalent impacts on soil and/or groundwater.

⁷⁵ A site is "delisted" if it is determined that no further response is required to protect human health or the environment after meeting criteria established by the EPA.

Phase II Environmental Site Assessment Sites

Phase II ESAs, were completed to further investigate the potential risk of encountering contaminants at high- and medium-risk sites as identified in the Phase I ESAs. Phase I ESA investigations typically involve review of site information, regulatory files, a site inspection, and interviews with owners and operators. Phase II ESA investigations generally include collecting soil and/or groundwater samples for laboratory analysis.

The purpose of the Phase II ESAs was to verify the presence of contamination, and to characterize the extent and magnitude of contamination where appropriate. The Phase II ESA investigations also identify any restrictions in potential soil reuse, based on MPCA guidance. There are two types of soil reuse restrictions identified in the Phase II ESAs:

- **Exceeds Unrestricted Use.** Indicates that soil contains debris or other field indications of contamination, and/or soil laboratory analytical results exceed the Tier 2 Residential Soil Reference Value (SRV); soil is considered impacted and may not be used on other sites at the discretion of the contractor, but may be reused on-site (i.e., within the same ESA site) with proper permitting
- **Exceeds Tier 2 Industrial SRV.** Indicates that soil laboratory analytical results exceed the Tier 2 Industrial SRV; soil is impacted. If removed, disposal at a landfill permitted to accept special waste is necessary.

A total of 171 high- or medium-risk sites within the hazardous and contaminated materials study area were investigated through Phase II ESAs. Of these, 61 sites exceed the thresholds for unrestricted soil reuse based on the Phase II ESAs. Twenty one of those sites also exceed the Tier 2 Industrial SRV threshold. These sites (i.e., exceeds unrestricted soil reuse and exceeds Tier 2 Industrial SRV) are considered to be impacted by hazardous and contaminated material. Impacted sites are illustrated on Exhibits 3.14-1 and 3.14-2. A summary of the rationale for the risk designation for each site is included in the Southwest LRT Phase II ESA Site Summary (see Appendix C). For additional detail, refer to the full Phase II ESA reports (see Hazardous and Contaminated Materials Evaluation Supporting Documentation; see Appendix C for instructions on how to access supporting documentation).

In order to determine the appropriate remediation for impacted sites, RAPs will be developed prior to construction. The RAPs are subject to approval by the MPCA prior to the start of any project construction activities within the affected area. Refer to Section 3.14.3.3 for more information on potential impacts related to construction activities, including RAPs.

3.14.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts related to hazardous and contaminated materials from the Project.

3.14.3.1 Long-term Direct Impacts from Hazardous and Contaminated Materials

Long-term direct hazardous and contaminated materials impacts relate to the generation and storage of hazardous materials or regulated wastes. In general, no adverse long-term direct hazardous or contaminated material impacts are expected as a result of the Project. This is due to the fact that operation of the light rail vehicles will not generate hazardous materials or regulated wastes. In addition to impacts resulting from pre-existing contamination in the study area, the operation and maintenance of the Project could be associated with petroleum releases from the equipment and materials stored at the Hopkins OMF site. The long-term operation of the proposed Hopkins OMF will require responsible management and containment of hazardous materials that are used and stored onsite, consistent with applicable regulatory standards (principally Minnesota Rules Chapter 7045). The collection and disposal of oils, grease, and other waste materials generated during vehicle maintenance and repair activities would be accomplished in accordance with industry BMPs for rail transit maintenance facilities at the Hopkins OMF.

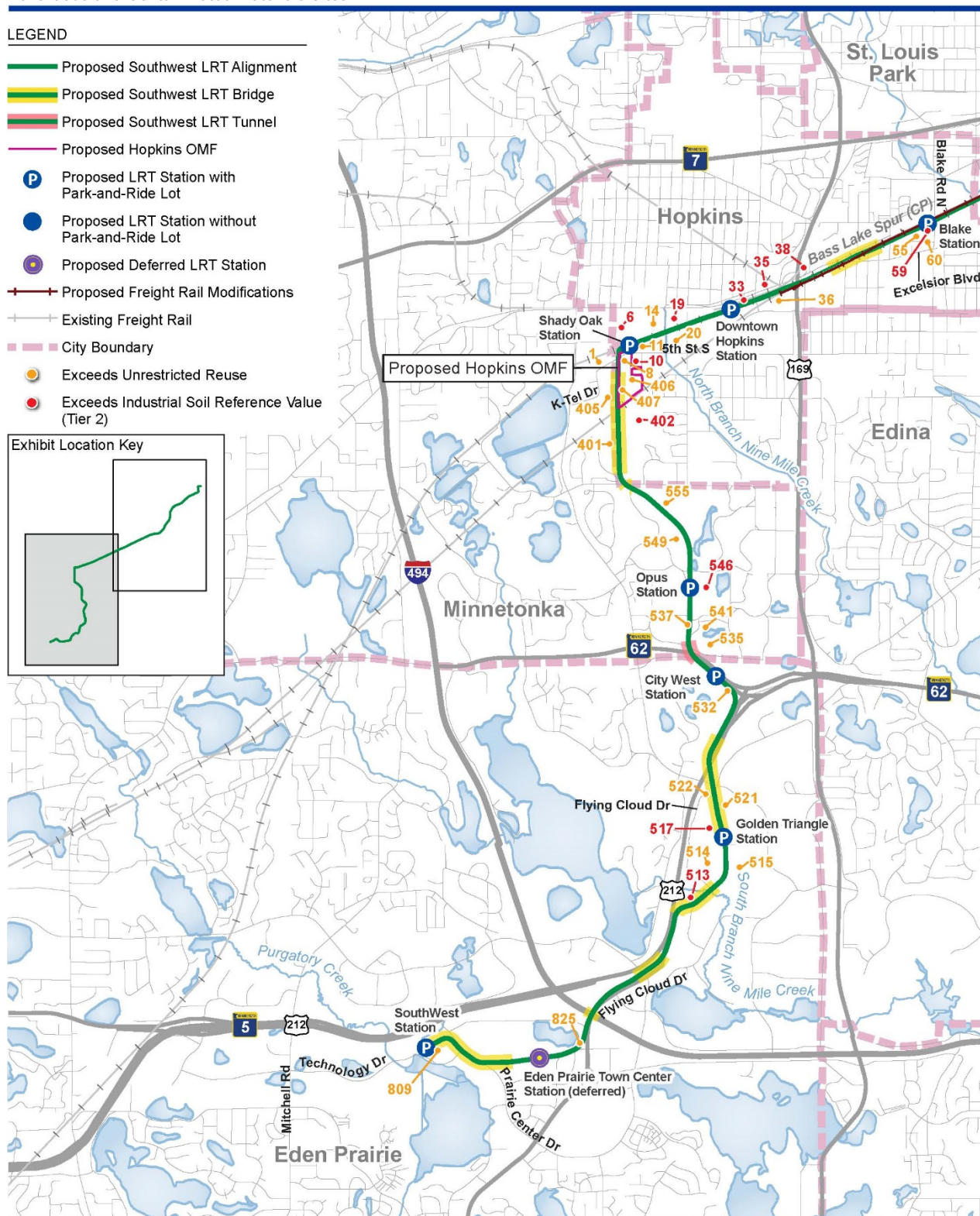
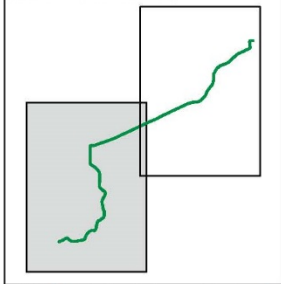
EXHIBIT 3.14-1

Hazardous and Contaminated Materials Sites

LEGEND

- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Bridge
- Proposed Southwest LRT Tunnel
- Proposed Hopkins OMF
- P Proposed LRT Station with Park-and-Ride Lot
- Proposed LRT Station without Park-and-Ride Lot
- Proposed Deferred LRT Station
- Proposed Freight Rail Modifications
- Existing Freight Rail
- City Boundary
- Exceeds Unrestricted Reuse
- Exceeds Industrial Soil Reference Value (Tier 2)

Exhibit Location Key




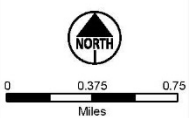

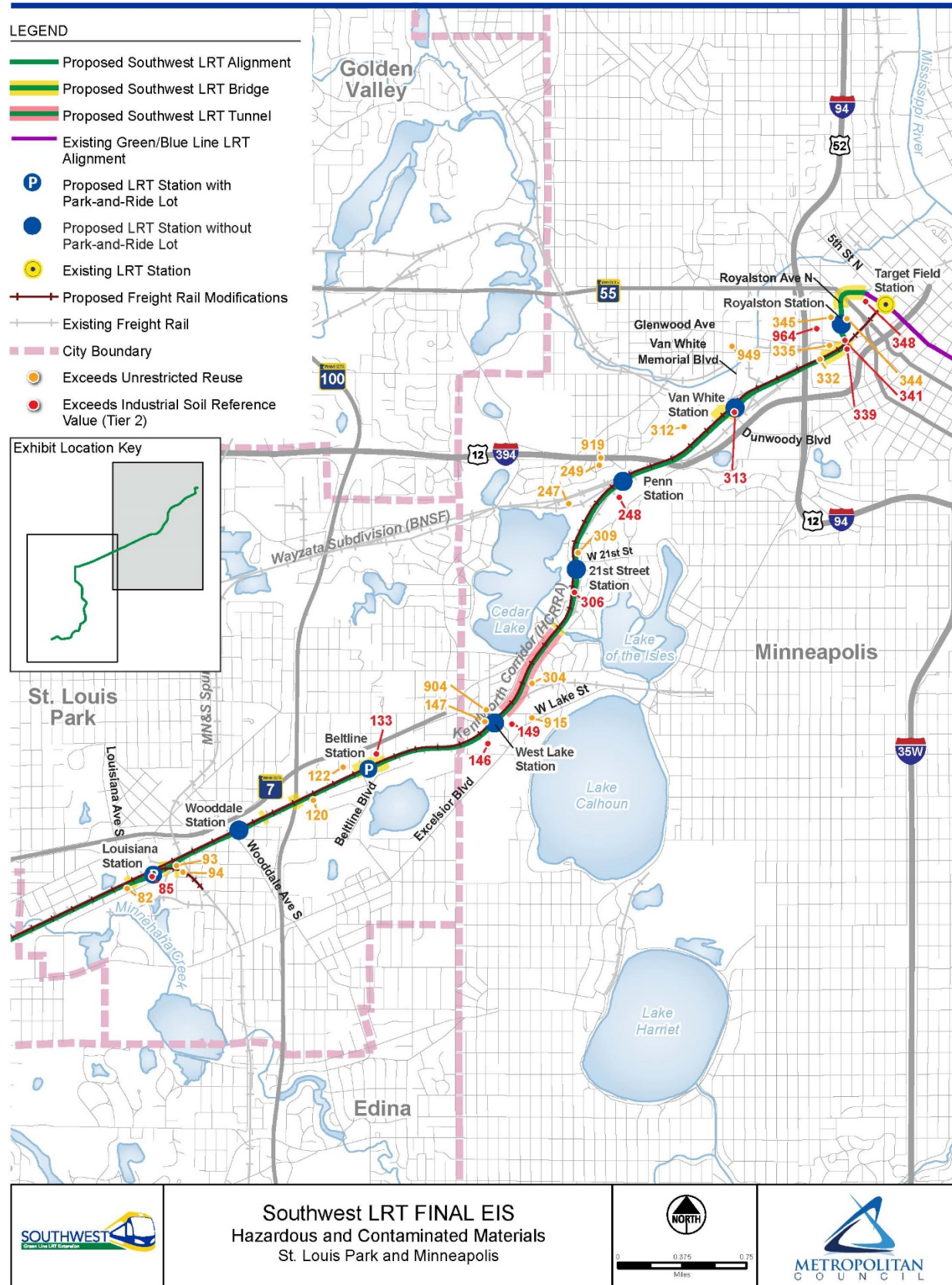
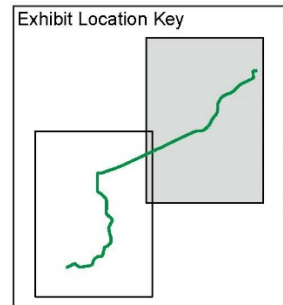
	Southwest LRT FINAL EIS Hazardous and Contaminated Materials Eden Prairie, Minnetonka and Hopkins		
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EXHIBIT 3.14-2

Hazardous and Contaminated Materials Sites

LEGEND

- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Bridge
- Proposed Southwest LRT Tunnel
- Existing Green/Blue Line LRT Alignment
- P Proposed LRT Station with Park-and-Ride Lot
- Proposed LRT Station without Park-and-Ride Lot
- Existing LRT Station
- Proposed Freight Rail Modifications
- Existing Freight Rail
- City Boundary
- Exceeds Unrestricted Reuse
- Exceeds Industrial Soil Reference Value (Tier 2)



The Hopkins OMF will be defined as a Hazardous Waste Generator and required to obtain a Generator License through Hennepin County. It will comply with applicable requirements for annual reporting/licensing, storage, shipping, record keeping, emergency planning, and disposal requirements. In addition, the proposed Hopkins OMF will be constructed with engineering controls to limit and contain releases and spills, should these occur. This includes the development of a Spill Prevention, Control, and Countermeasure (SPCC) plan to minimize potential long-term effects related to accidental spillage of petroleum products stored onsite.⁷⁶ The SPCC plan will be developed by the Council in accordance with the Clean Water Act and will include control measures to prevent oil spills from entering waters and countermeasures to contain cleanup and mitigate the effects of an oil spill related to aboveground petroleum storage tanks. All required permits will be obtained prior to construction (see Section 3.9 for more details on NPDES permit).

Through compliance of regulatory requirements and implementation of best management practices, the long-term direct impacts (i.e., releases) from project operation and maintenance activities will be very low and no adverse long-term direct hazardous or contaminated material impacts are expected as a result of OMF operations.

At some locations along the proposed light rail alignment, implementation of the Project will result in a permanent beneficial effect of removing existing hazardous and contaminated soils not related to the Project, to meet MPCA risk-based guidance and/or the capping of known contaminated sites related to construction of the Project. Refer to Section 3.14.3.2 for a summary of potential long-term indirect impacts related to construction of the Project.

The proposed light rail tunnel in the Kenilworth Corridor would pass through an area of high groundwater due to shallow groundwater depth in combination with the highly permeable nature of the soils. Despite these conditions, the potential for contamination to groundwater from operation of the light rail tunnel would be low because the light rail trains would be electric and there are no activities associated with train operations in the tunnel that would generate pollutants that could contaminate groundwater (refer to *Southwest Light Rail Transit: Kenilworth Shallow LRT Tunnels Water Resources Evaluation*, located in Appendix D for more information). Water entering the tunnel could come from groundwater entering via small cracks or joints in the concrete walls, floors, and ceilings, which is expected to be minimal due to waterproofing measures for the tunnel. The small amount of water that may leak into the tunnel will have no effect on the level of the groundwater table. The Phase II ESA results indicate that groundwater in the vicinity of the proposed tunnel is not contaminated. In the unlikely event that groundwater that leaks into the tunnel has come into contact with contaminated soils prior to entering the tunnel, plans are in place to manage all groundwater entering the tunnel, including water collected in the tunnel, which will be treated, if required, and pumped to the adjacent sanitary sewer systems owned by either the City of Minneapolis or Metropolitan Council Environmental Services, preventing hazardous materials or contaminated stormwater in the tunnel from being released into the groundwater.

3.14.3.2 Long-term Indirect Impacts from Hazardous and Contaminated Materials

The Phase II ESA investigations evaluated long-term risks associated with possible exposure to groundwater contamination; however, the Project will not require permanent pumping of groundwater, and, therefore, there is no potential for long-term indirect impacts related to permanent groundwater pumping in zones of remaining contaminated groundwater. Refer to Section 3.8 “Geology and Groundwater Resources” for additional discussion related to groundwater.

Long-term management of methane-related indirect impacts on the proposed Hopkins OMF site from the Hopkins Sanitary Landfill may be necessary to limit potential worker exposure to methane. OSHA guidelines

⁷⁶ The Clean Water Act requires a SPCC plan for storage tanks with capacity to store at least 1,320 gallons of petroleum above ground.

will be followed in the operation of the OMF. This issue will be further evaluated as part of the Engineering process, prior to construction.

A potential beneficial long-term indirect effect of properties being on or in the vicinity of proposed light rail stations is that known and unknown hazardous and contaminated properties may be cleaned up as redevelopment occurs. Areas encountered during construction of the Project that contain hazardous and contaminated materials that are within the Project's limits of disturbance will be cleaned up as part of the Project, in accordance with the Project's RAP and CCP (see Section 3.14.4). See Appendix E for the preliminary engineering plans that illustrate the Project's limits of disturbance.

3.14.3.3 Short-term Impacts from Hazardous and Contaminated Materials

Short-term direct and indirect impacts typically result from earthwork or other disturbance at or in proximity to contaminated areas that might mobilize or result in the release of hazardous and contaminated materials. Short-term construction impacts can also result from spills of hazardous materials during construction.

The Council conducted Phase II ESAs to further investigate the potential risk of encountering contaminants within the area of construction (direct effect) and those that have the potential to migrate through the soil or groundwater from nearby sites (indirect effect). Refer to Section 3.14.3 for more information on the environmental site assessment process. In cases where the presence of contamination was verified through the Phase II ESAs (i.e., sites which exceed unrestricted use and Tier 2 Industrial SRV standards), RAPs for remediation will be developed. RAPs are subject to MPCA approval prior to the start of any project construction activities. Refer to Section 3.14.4.2 for more information on the response plans upon encountering unanticipated contamination.

In addition to construction impacts, people present within and adjacent to the project construction area could potentially be exposed to hazardous materials. Site workers may be exposed through physical contact with, or ingestion or inhalation of, contaminants uncovered in excavations. OSHA guidelines will be followed during construction. Exposures to passersby would likely be limited to inhalation of contaminant vapors emanating from freshly uncovered contaminants. Public exposure through physical contact with a contaminated material or contaminant ingestion would be prevented by site access barriers.

The project will use engineering controls and BMPs to avoid spills of hazardous materials during construction. This includes preparation and adherence to a SWPPP that follows MPCA, Minnesota Department of Natural Resources and MnDOT guidelines and best management practices, to limit and contain releases and spills to minimize the likelihood of soil and groundwater contamination during construction.

3.14.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term impacts related to hazardous and contaminated materials. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Sections 3.14.3.1, 3.14.3.2, and 3.14.3.3 for additional information on the identified hazardous and contaminated material impacts and avoidance measures).

3.14.4.1 Long-term Mitigation Measures

No mitigation measures are warranted for long-term hazardous and contaminated materials impacts, because there will be no adverse impacts due to the effectiveness of identified avoidance measures.

3.14.4.2 Short-term Mitigation Measures

As the Project advances, it will be further refined to avoid disturbance to properties with known contaminants, as possible. In cases where the disturbance of hazardous and contaminated material cannot be avoided, the Council will conduct site remediation in accordance with the MPCA Brownfield Program regulatory framework and the approved RAPs for the Project.

Impact. Short-term direct and indirect impacts will result from earthwork or other disturbance at or in proximity to contaminated areas that might mobilize or result in the release of hazardous and contaminated materials. Short-term construction impacts can also result from spills of hazardous materials during construction.

Mitigation. In cases where the disturbance of hazardous and contaminated material cannot be avoided, the Council will identify mitigations for potential short-term (construction) hazardous and contaminated materials impacts within the guidelines of the MPCA Brownfield Program regulatory framework. The Project entered in the Brownfield Program on September 8, 2014, and has received site identification numbers PB4648/VP31670 from the MPCA. All mitigation measures will be implemented in accordance with commitments made as part of the MPCA's oversight of the Brownfield Program and the Project's participation in it. Implementation of these measures will result in controlled management of hazardous and contaminated materials and a low risk of human exposure to unhealthy contaminants. The following are specific mitigation measures that will be implemented with the Project:

- **Response Action Plans (RAPs).** RAPs were developed by the Council and approved by MPCA to address the risks identified in the Phase I and Phase II environmental site assessments. Cleanup of identified contamination will begin prior to, or at the same time as, project excavation and/or drilling activities, in accordance with the approved RAPs. All cleanup activities will be conducted with prior MPCA approval and in accordance with the approved Site Health and Safety Plans (HASPs).⁷⁷ Qualified inspectors will monitor cleanup activities. A final report will be prepared and submitted to the MPCA documenting all removal and disposal activity.
- **Construction Contingency Plan (CCP).** It is reasonable to expect that previously undocumented soil or groundwater contamination may be encountered during construction. The Council has prepared a CCP to address the discovery of unknown contamination. The CCP was approved by MPCA and includes outlines of procedures for initial contaminant screening; soil and groundwater sampling; laboratory testing; and removal, transport, and disposal of contaminated materials at licensed facilities. Contaminated material removal and disposal will be in accordance with this plan, monitored by qualified inspectors, and documented in final reports for submittal to MPCA.
- **Hazardous Building Material Surveys.** In addition to contaminated soil and groundwater, the potential exists for structures on acquired land to contain asbestos, lead paint, or other hazardous materials. Any existing structures on acquired land will be surveyed for the presence of hazardous/regulated materials prior to their demolition or modification. Potentially hazardous materials will be handled and managed in compliance with all applicable regulatory standards and will be disposed in accordance with all Hazardous Materials Abatement Plans for in-place hazardous/regulated materials, and the RAP/CCP for hazardous/regulated materials in the site soils.
- **Regulated Waste Assessments.** Regulated Waste Assessments were completed for existing bridge structures that will be modified or demolished as part of the Project. The purpose of the work is to assess the presence and quantity of asbestos and regulated waste at the seven bridges and two pier protection locations along the Southwest LRT alignment (see Appendix E for the Project's preliminary engineering plans). The effort includes documenting and sampling suspect regulated waste, including asbestos, lead-based paint, PCB containing caulk, and mercury-containing light bulbs and ballasts. Potentially hazardous materials will be handled and managed in compliance with all applicable regulatory standards and will be disposed of in

⁷⁷ HASPs will be developed by the individual contractors as a requirement of the Project's contract specifications. Contractors will also be responsible for implementation of HASPs.

accordance with the Hazardous Materials Abatement Plans for in-place hazardous/regulated materials, and the RAP/CCP for hazardous/regulated materials in the site soils.

3.15 Electromagnetic Fields, Electromagnetic Interference, and Utilities

This section describes the long-term direct and indirect effects and short-term (construction) direct and indirect effects of the Project from electromagnetic fields (EMF) and electromagnetic interference (EMI), and on public and private utilities. (See Section 3.17 for cumulative impacts.) This section includes an overview of the regulatory context and methodology used for the analysis; an assessment of the existing EMF/EMI and utilities environment; a description of the anticipated impacts related to EMF/EMI and impacts on utilities; and a description of mitigation measures to implement with the Project.

3.15.1 Regulatory Context and Methodology

3.15.1.1 Electromagnetic Fields and Electromagnetic Interference

Neither the federal government nor the State of Minnesota have set standards for EMF exposure and/or EMI levels for electrical equipment. Federal guidelines are under consideration by the United States Food and Drug Administration, Federal Communications Commission, U.S. Department of Defense, and EPA. However, international EMF exposure guidelines have been adopted that can be used for reference.

FTA has published a guidance document for the evaluation of EMI produced by transit projects (FTA, 2008). This document contains the statement, “This guidance focuses on approaches to preventing and reducing community environmental, health, and safety impacts from transit-generated EMF and electromagnetic radiation (EMR).” The analysis described in this section follows the guidance in the FTA document.

EMF occurs wherever electricity is produced and used. Electric fields are produced by charges. Magnetic fields are produced by the flow of electric current. The greater the electric charge, the greater the electric field. Similarly, the greater the electric current, the greater the magnetic field. EMF surrounds all electrical equipment and facilities, including the electrical conveyance lines and electrical devices as proposed in the Project. Electromagnetic fields can result in electromagnetic interference which can cause disruptions and possibly malfunctions in certain types of sensitive equipment found in hospitals, large medical clinics, and university and industrial scientific laboratories.

The EMF/EMI study area is the area along the alignment where EMF/EMI from the Project may interfere with potentially sensitive electronic equipment. This includes the portion of the Project where the LRT will draw the maximum amount of electrical power to accelerate or decelerate.

Several studies have been conducted to assess the potential impact of LRT operations on nearby facilities that may be sensitive to EMF/EMI. An evaluation was performed of potential EMI interference from the Maryland Transit Authority proposed Purple Line LRT passing through the campus of the University of Maryland campus in College Park, Maryland (University of Maryland, 2010). This study demonstrates that EMI effects on sensitive receptors disappear within a distance of 300 feet. The Purple Line evaluation includes references to seven other university studies that also evaluated possible EMI interference from passing light rail trains. The overall conclusion of these collective studies was that interference with sensitive university laboratory equipment at distances greater than 150 feet is either not observed at all or can be mitigated. As a result of these studies of similar light rails systems, a distance of 300 feet on both sides of the centerline of the tracks was selected as the boundary of the EMF/EMI study area.

The EMF/EMI study area was surveyed for the presence of facilities that could be sensitive to EMF/EMI exposure. The specific location for each facility was evaluated using information found through publicly available information sources (such as general internet search engines and business-specific websites) and the submittal of questions to the users of identified facilities (listed in Section 3.15.2.1). In addition, a final check on the presence of EMF/EMI-sensitive equipment was made, based on availability and access, during site visits within the EMF/EMI study area.

3.15.1.2 Utilities

The following list summarizes representative federal and state laws, regulations, and guidelines that are associated with utility relocation and accommodation.

- Federal
 - U.S.C., Title 23, Sections 123 and 109(l)(1)
 - U.S.C., Title 23, CFR 645, Chapter I, Subchapter G, Part 645, Subparts A and B (FHWA, 2003)
 - FTA Project and Construction – Management Guidelines (2003), Appendix C – Utility Agreements
- State of Minnesota
 - MnDOT Policy Utility Accommodation on Highway Right-of-Way
 - MnDOT Policy Accommodation of Wireline on Freeway Right-of-Way
 - Minnesota State Constitution – Article 1, Section 13
 - Minnesota Statute Section 161.20, Subdivision 1
 - Minnesota Statute Section 161.20, Subdivision 2
 - Minnesota Statute Section 161.45
 - Minnesota Statute Section 161.46
 - Minnesota Statute Section 216B, Public Utilities
 - Minnesota Statute Section 216D.04
 - Minnesota Statute Section 222.37, Subdivision 2
 - Minnesota Rule Parts 8810.3100 through 8810.3600

To identify underground and aboveground utilities that could be affected by the construction of the Project, a review of the major public and private utilities within the utility study area was conducted. The utilities study area is defined as the area where major utilities are located within or immediately adjacent to the limits of disturbance and which may be relocated by the Project. The major utilities inventoried are defined as follows:

- Water mains, 18 inches or greater in diameter
- Sanitary sewer lines, 18 inches or greater in diameter
- Sanitary force mains, 8 inches or greater in diameter
- Storm sewer lines, 24 inches or greater in diameter
- Aboveground or underground electrical transmission lines
- Gas-main substations and gas lines 12 inches or greater in diameter
- Communication infrastructure

The cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis; along with Hennepin County, MnDOT, and Metropolitan Council Environmental Services were contacted to obtain public utility information for water main, sanitary sewer, storm sewer, and electric/communication locations. Private utility information was obtained through the information resources available within the 2015 Gopher State One Call Handbook (gopherstateonecall.org, 2015), in meetings with each private utility and through subsurface utility engineering investigations performed as part of the Project. The locations of major utilities were then compared to the light rail alignment and crossing conflicts were noted. In addition, any utilities within the utilities study area were identified for potential conflicts.

3.15.2 Affected Environment

This section describes the potentially sensitive EMI receptors within the EMF/EMI study area (300 feet), and the existing utilities within the utilities study area (study areas are defined in Sections 3.5.1.1 and 3.5.1.2, respectively).

3.15.2.1 Electromagnetic Interference and Electromagnetic Fields

The Project will operate on 750-volt direct current (DC) traction power. The use of this DC power will generate low-level DC electric and magnetic fields (i.e., EMF) on and adjacent to light rail vehicles, including in passenger station areas.

EMI could be produced by the moving light rail trains from a pantograph⁷⁸ sliding along the overhead catenary wires or from electric noise produced by motors and controls on board the trains. When light rail trains are traveling, their pantographs slide along the overhead catenary wires and their motors and controls produce electronic noise, both of which can generate EMI. Also the LRT, which contains large masses of ferromagnetic metals, moving through the earth's magnetic field can produce EMI. The EMI could intermittently interfere with the operation of sensitive electronics and electrical equipment along the right-of-way as a train passes. As previously stated, the EMF/EMI study area was surveyed for the presence of facilities that could be sensitive to EMI exposure, which are listed in Table 3.15-1.

TABLE 3.15-1
Potential EMI Sensitive Receptors

Potential Receptor	Location	Type of Business	Approximate Distance from Center of LRT Alignment	Sensitive to EMF/EMI from LRT?
Optum Insight	12125 Technology Dr, Eden Prairie	Data processing	460 feet	No
Access Genetics	7400 Flying Cloud Dr, Eden Prairie	DNA testing	130 feet	No
American Medical Systems	10700 Bren Rd, Minnetonka	Medical equipment manufacturer	70 feet	No

Source: Council, 2015.

3.15.2.2 Utilities

The activities associated with the construction of an LRT system often require significant excavation and the erection of bridges, catenary systems, tunnels, and other vertical infrastructure. Excavation can occur in areas where existing underground utilities are in place; in these situations, the utilities would need to be reconstructed and/or relocated. Similarly, vertical infrastructure components could interfere with overhead utilities, especially electrical transmission and distribution lines.

To identify underground and aboveground utilities that could be affected by the construction of the Project, a review of the major public and private utilities within the utilities study area was conducted. Underground utilities present within the utilities study area include water, sewer, stormwater, and natural gas pipes and pipelines and electrical distribution and communication wires and cables. Aboveground utilities include electrical transmission or distribution lines and communication (telephone and cable TV) lines. In general, there is a greater concentration of utilities in the more densely developed portions of the project. A description of the detailed listing of the public and private utilities located within the utilities study area is provided in *Southwest LRT Utility Impacts – Supporting Information* (instructions on how to access the document are found in Appendix C).

⁷⁸ A pantograph is a telescoping apparatus mounted on the roof of an electric rail car that presses an electrode up against an overhead catenary wire to collect power for LRT operation. As the light rail vehicle moves down the tracks, the pantograph electrode slides along and against the catenary wire.

3.15.3 Environmental Consequences

3.15.3.1 Electromagnetic Fields and Electromagnetic Interference

A. Long-term Direct EMI/EMF Impacts

People riding the LRT could be exposed to DC magnetic fields as high as 1,000 milli Gauss, which is well below acceptable international guidelines for public exposure to DC magnetic fields of 400,000 to 1,180,000 milli Gauss (FTA, 2008). People in buildings adjacent to the LRT alignment would be exposed to lower levels of EMF, so there would be no EMF effect from the Project on people either riding the LRT or in buildings adjacent to the light rail alignment.

No long-term direct impacts from EMFs and the resulting EMI are anticipated. Based on the analysis conducted of the EMF/EMI study area and of potential EMI-sensitive receptors, as presented in Section 3.15.2.1 and Table 3.15-1, there is no on-site equipment on the assessed properties sensitive to EMI from the Project.

B. Long-term Indirect EMF/EMI Impacts

No long-term indirect impacts from EMFs and the resulting EMI are anticipated. Based on the analysis conducted of the EMF/EMI study area and of potential EMI-sensitive receptors, as presented in Section 3.15.2.1 and Table 3.15-1, there is no on-site equipment on the assessed properties sensitive to EMI from the Project.

C. Short-term EMF/EMI Impacts

No short-term impacts are anticipated to EMF/EMI-sensitive receptors related to Project construction.

3.15.3.2 Utilities

A. Long-term Direct Impacts on Utilities

No adverse long-term direct impacts to utilities are anticipated because all conflicting utilities will be relocated and services maintained, in accordance with the Southwest LRT Utility Relocation and Management Plan. Site-specific conflicts will be addressed by design measures such as relocating utilities, as appropriate.

To minimize the potential for long-term damage to existing utilities, short-term conflicts during construction, and disruption of light rail service in the future, a utility-free zone is established based on the project design criteria. An evaluation of potential utility conflicts and whether affected utilities within the utility-free zone would require relocation will be conducted during Engineering. The relocation of a segment of a conflicting utility line beyond the limits of construction will prevent conflicts with construction of the LRT alignment and minimize future disturbances to the route during maintenance of the underground utilities.

Overhead electric and communication lines will be adjusted horizontally and/or vertically, as necessary, to provide adequate vertical clearance for the light rail vehicles and the overhead catenary system. For example, in some cases, aboveground utilities located on poles could be relocated to taller poles or a different type of pole to address vertical clearance requirements.

Underground utilities⁷⁹ were evaluated to determine their condition and potential reaction to the added weight loading from the light rail and freight rail and to verify that the utility line is buried deep enough to meet the vertical clearance requirements for the utility owner(s), MnDOT, BNSF, and Canadian Pacific. Utility conflicts will be resolved through a variety of appropriate techniques, such as lowering the existing utility, encasing the utility line for additional protection, or relocation of the line away from the LRT alignment corridor. Manholes and vaults that are in conflict with the LRT corridor and that limit access to

⁷⁹ The underground utilities evaluated for this analysis include water, sewer, stormwater, and natural gas pipes and pipelines and electrical distribution and communication wires and cables within or crossing the utilities study area (see Section 3.15.2.2)

the underground utilities will require relocation to provide adequate access. Relocating water mains could temporarily affect access to and use of fire hydrants, but no long-term effects are expected.

B. Long-term Indirect Impacts on Utilities

No adverse long-term indirect impacts to utilities are anticipated because conflicting utilities will be relocated and services maintained, in accordance with the Southwest LRT Utility Relocation and Management Plan. Site-specific conflicts will be addressed by design measures such as relocating utilities, as appropriate.

The light rail overhead catenary system will operate by supplying electrical energy to the train with the return current flowing through the rails. This return current can also flow through underground metal utility pipes and cable lines near the LRT alignment. The potential for long-term indirect impacts, such as corrosion of existing metal utility pipes and cables due to stray current from the light rail electrification systems was evaluated. The project will include measures to minimize stray current and reduce the amount of corrosion due to stray current in accordance with Project's design criteria.⁸⁰ Therefore, no long-term indirect impacts related to stray current are anticipated.

The electric energy demands for LRT alignment operation could also require upgrades to electrical transmission systems along the corridor, which could involve increasing the capacity of transmission lines, replacing poles or towers, and improving electrical substations. Necessary improvements will be determined through consultation with Xcel Energy prior to construction but will likely involve upgrading existing transmission facilities rather than creating new facilities. Refer to Section 3.16 for additional information on the potential energy-related impacts of the Project.

C. Short-term Impacts on Utilities

Short-term (construction) impacts to utilities will occur during excavation and grading activities, placement of structural foundations, and during work that requires large-scale equipment that will affect overhead utilities. Short-term utility service disruptions will occur throughout construction to facilitate utility relocations. It is anticipated that these disruptions will be minimal, with temporary connections provided to customers prior to permanent relocation activities. Utility owners will ultimately decide when and if disruptions to service are to be allowed.

Prior to construction, affected area utility companies and utility agencies will be contacted and requested to provide line relocation measures and approval of the proposed alteration of utility lines. In addition, utility location excavations and preconstruction surveys in general accordance with the *MnDOT Utility Accommodation Policy* (MnDOT, 2014) will help minimize unintended utility service disruptions.

Through construction specifications, the Council will require the appropriate construction contractor(s) to notify affected businesses and residences of planned disruption of service due to construction activities. Utility locations that are uncertain or misidentified can be unintentionally damaged during construction. The large number of utilities present within the utilities study area increases the likelihood of encountering previously unidentified utilities. Should utilities be discovered during construction that were not identified in the contract documents the appropriate utility companies and agencies will be contacted to identify the line(s). The discovered line(s) will not be disturbed until businesses and residences are notified and the utility owner approves the proposed alteration.

Coordination with local and state agencies may be required to relocate specific utilities outside the project corridor. Utilities that are located within rights-of-way owned by cities or county may be subject to an individual franchise agreement as authorized by Minnesota Statue 216B, Public Utilities, which provides the terms for which the utility companies may operate in the public right-of-way. Public and private utilities must conform to *MnDOT Utility Accommodation Policy* (MnDOT, 2014), which requires owners to obtain a

⁸⁰ Cathodic protection is a way to prevent corrosion of a pipeline by using special cathodes and anodes to circumvent corrosive damage caused by electrical current.

permit in order to place utility facilities on trunk highway right-of-way. Utility installations on, over, or under railroad property will require review and approval by the railroad, shall conform to requirements contained within the *BNSF Utility Accommodation Policy* (BNSF, 2011) and comparable policies for Canadian Pacific Railway, and may require a Utility License Agreement issued by the railroad.

3.15.4 Mitigation Measures

3.15.4.1 Electromagnetic Fields and Electromagnetic Interference

No mitigation measures are warranted for long-term or short-term direct or indirect impacts from EMF/EMI due to the absence of any corresponding impacts. The LRT startup activities will include a test to verify there are no EMI impacts from the 750 V DC LRT power supply or catenary lines and/or other nearby utilities to the Rail Signal System.

3.15.4.2 Utilities

No mitigation measures are warranted for long-term or short-term direct or indirect impacts to utilities due to the effectiveness of identified minimization measures. Actions will be conducted to facilitate coordination and communication during construction activities (see Section 3.15.3.2.C).

3.16 Energy

This section describes the potential long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on energy consumption (see Section 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis; an assessment of existing built environment; and a description of the anticipated long and short term impacts related to energy consumption.

3.16.1 Regulatory Context and Methodology

At the federal level, the Council on Environmental Quality regulations at 40 CFR 1502.16(e) require the consideration of “energy requirements and conservation potential of various alternatives and mitigation measures” of the proposed action.

The energy study area includes the seven-county region of central Minnesota governed by the Metropolitan Council regional governmental agency and planning organization. Within these seven counties, an evaluation of the mode choices made by commuters and riders has been analyzed along with the corresponding consumption of energy used for personal transit. The study area also includes the Xcel Energy electric transmission and distribution facilities that will be affected by the increased use of electricity to power the operation of the Project.

Energy consumption is calculated based on the projected travel forecasts for the energy study area, reported by British thermal units (Btu) per mile as calculated from the VMT. The evaluation of energy consumption factors is based on estimates of average energy consumption rates by general transportation mode (e.g., personal passenger vehicles, light rail vehicle).

The analysis of regional energy consumption includes a measurement of how much energy is used in a given geographic area for each type of transportation activity. Regional energy consumption is based on regional VMT derived from the Council’s travel demand model (see Section 4.1 for additional information on the regional model). Transit operating consumption is defined using the following three categories of energy use: vehicle propulsion; operation of stations and ancillary facilities; and maintenance of transit vehicles and track systems.

The impacts of the No Build Alternative and the Project on energy consumption were determined by comparing total forecast energy consumption for these alternatives in 2040. Table 3.16-1 presents the amount of energy used per mile by each mode of transportation in 2012, the latest year data are available. Annual regional energy use was estimated by multiplying these energy-use factors by the total miles traveled for each mode.

TABLE 3.16-1
Energy Consumption Factors by Transportation Mode

Transportation Mode	Energy Consumption Factor (Btu/vehicle mile)
Light Rail Transit	63,469
Heavy Duty Vehicles	21,525
Bus	37,105
Passenger Vehicles ^a	5,667

^a Passenger vehicles value is weighted average of cars, personal trucks, and motorcycles.

Note: Data for 2012.

Source: U.S. Department of Energy, 2014 Transportation Energy Data Book: Edition 33 – 2014, U.S. Department of Energy Oak Ridge National Laboratory.

3.16.2 Affected Environment

The energy study area is primarily suburban in its western and central portion and urban in its eastern portion within the City of Minneapolis. Existing development along the Project alignment includes an array of residential, business, industrial, institutional, park, and transportation uses. Existing land uses along the proposed alignment options are identified and described in Section 3.1

3.16.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts on energy from the No Build Alternative and the Project. The total projected long-term annual regional energy consumption for the No Build Alternative and the Project in 2040 is presented in Table 3.16-2 and discussed within this section. Energy consumption was calculated by multiplying the energy-use factors in Table 3.16-1 by the total miles traveled for each transportation mode.⁸¹

Energy consumption during the short-term construction period is discussed in Section 3.16.3.3.

3.16.3.1 Long-term Direct Impacts on Energy

This section includes an analysis of regional energy consumption based on mode shifts from single-occupant vehicles to transit, along with analysis of potential increases in energy consumption from new development and redevelopment in the light rail station areas.

A. No Build Alternative

The total long-term regional energy consumption for the No Build Alternative would be approximately 232.51 trillion Btu annually. The No Build Alternative would have a slightly higher forecast annual regional energy consumption (109 billion Btu more per year) than the Project. This higher consumption under the No Build Alternative is expected, because no mode shifts from single-occupant vehicles to transit would occur as they would with the Project.

B. Project

The total long-term regional energy consumption for the Project will be approximately 232.40 trillion Btu annually. The Project will have an annual regional energy consumption 109 billion Btu lower than the No Build Alternative.

⁸¹ Btu were calculated using information from the Daily VMT found in Metropolitan Council's 2040 Regional Travel Model using the following steps: (1) Daily VMT was annualized to determine Annual VMT by vehicle type (light rail, heavy-duty vehicles, bus, and passenger vehicles) for the Project. (2) Annual VMTs (calculated in Step 1) were multiplied by Btu using the VMT factors, shown in Table 3.16-1 Energy Consumption Factors, to calculate Btu by vehicle type. (3) The data calculated in Step 2 were summed to determine total Btu for each alternative.

TABLE 3.16-2

Projected Annual Energy Consumption of the No Build Alternative and Project in 2040

Mode	No Build	Project
2040 Annual Vehicle Miles Traveled (in thousands)^a		
Light Rail Transit	3,232	4,446
Heavy Duty Vehicles	1,116,000	1,116,000
Bus	70,291	71,855
Passenger Vehicles ^b	36,293,914	36,250,920
Total	37,483,437	37,443,222
Total Difference from No Build	N/A	-40,215
2040 Annual Energy Consumption (billions of Btu)^c		
Light Rail Transit	205	282
Heavy Duty Vehicles	24,022	24,022
Bus	2,608	2,666
Passenger Vehicles	205,678	205,434
Total	232,513	232,404
Total Difference from No Build	-	-109

^a Source: Miles provided by Metro Transit May 2015 for regional daily VMT for the average weekday in revenue miles by mode. Average weekday VMT multiplied by 365 days per year to achieve annual vehicle miles.

^b Passenger vehicles value is weighted average of cars, personal trucks, and motorcycles.

^c Calculated by multiplying the VMT in this table by the energy consumption factors in Table 3.16-1 for each mode.

Note: N/A = not applicable.

Source: Council, 2015.

Under the Project, there will be mode shifts from single-occupant vehicles to transit, which will reduce long-term energy consumption in the study area and in the region as a whole. The projected reduction in single-occupancy VMT is predicted by the Council's travel demand model for this project, as discussed in Section 4.1.

3.16.3.2 Long-term Indirect Impacts on Energy

The Project will result in shifts from single-occupant vehicles to transit (see Section 4.1). As a result, a potential benefit from that mode change would be a projected annual reduction in passenger vehicle miles traveled of 42,994,000, with a resulting reduction in annual energy consumption of 244 billion Btu in the project area and the region over the long term.

New development and redevelopment in the proposed light rail station areas could result in greater demand for electricity in these locations; however, this type of new urban development (e.g., buildings) is typically more energy efficient than existing or less dense development.

3.16.3.3 Short-term Impacts on Energy

For the Project, energy will be used for the production of the raw materials and components used in construction, and for the operation of construction equipment. Energy use as a result of these activities will be localized and temporary and will have little effect on regional energy consumption.

Construction-related energy consumption for the Project was estimated by applying a highway construction energy factor to the total construction cost of the Project. The amount of energy used during construction of a project is roughly proportional to the project cost. Only direct construction costs related to this project were used to calculate energy consumption during the construction period.

The California Department of Transportation (Caltrans) derived energy consumption factors for different light rail transit facilities in *Energy and Transportation Systems* (Caltrans, 1983). These factors are still widely used in the industry today. The following energy consumption factors presented in Table 3.16-3

were used to estimate the energy consumed during project construction. The consumption factors were reported in Btu per dollars of construction spending. Because the Caltrans report was developed using 1973 construction dollars, the energy consumption factors were adjusted to account for the change in construction costs over time. The Turner Construction Company Building Index was used to adjust the factors to second quarter 2015 dollars. The estimated direct project construction costs are presented in Table 3.16-4 for the light rail facility types listed in Table 3.16-3.

Using the factors in Table 3.16-3 and the estimated construction costs in Table 3.16-4, the total energy consumption for the construction of the Project would be 35 billion Btus.

TABLE 3.16-3

Energy Consumption Factors by Light Rail Facility Type

Light Rail Facility Type	Energy Consumption Factor (Btu per dollars of construction spending in Second quarter 2015 dollars)
Track Work	4,710
Structures	4,710
Electric substations	7,238
Signaling	1,981
Stations, stops, and terminals	4,710
Parking	5,792
Maintenance facilities	5,792

Source: *Energy and Transportation Systems* (Caltrans, 1983) and *Turner Construction Company Building Index* <http://www.turnerconstruction.com/cost-index>.

TABLE 3.16-4

Estimated Project Construction Costs by Light Rail Facility Type

Light Rail Facility Type	Estimated Project Construction Costs
Track Work	\$178,412,000
Structures	\$216,066,000
Electric substations	\$85,963,000
Signaling	\$46,492,000
Stations, stops, and terminals	\$52,564,000
Parking	\$29,466,000
Maintenance facilities	\$82,466,000

Source: Metro Transit July 23, 2015.

3.16.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term energy impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address.

3.16.4.1 Long-term Mitigation Measures

No mitigation measures are warranted for long-term impacts to energy, because there will be no adverse impacts to energy consumption due to a decrease in total annual regional energy consumption as compared to the No Build Alternative. During operation, Southwest LRT will utilize regenerative braking, similar to the Blue and Green Lines currently in operation. Energy generated by LRV braking can be used by another LRV if they are in the same power section at the same time, otherwise the energy will dissipate as heat from the top of the LRV.

Although not required, there are opportunities to reduce energy consumption, which include the construction of energy-efficient structures, such as park-and-ride facilities, light rail stations, and the OMF. An assessment of energy-saving opportunities and appropriate energy-saving measures was conducted by the Council and the following have been incorporated into the Project:

- Follow the State of Minnesota Sustainable Building Guidelines (MSBG- B3)(similar to LEED)
- Use highly efficient LED lighting throughout the Project (street lighting to building lighting)
- Maximize use of daylight at OMF, supplemented with lighting control management software
- Coordinate with Xcel Energy for efficient OMF heating, cooling, and lighting control systems
- Use energy recovery units in the OMF
- Use a high-efficiency chiller at OMF
- Use condensing boilers at OMF
- Use closed-cell cooling tower (free winter cooling)

3.16.4.2 Short-term Mitigation Measures

No mitigation measures are warranted for short-term impacts to energy because the impacts will be localized and minimal in the scale of regional energy consumption.

3.17 Cumulative Impacts

This section identifies the Project's cumulative impacts. Cumulative impacts result from "the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually-minor but collectively-significant actions taking place over a period of time" (40 CFR 1508.7). The purpose of a cumulative impacts analysis "is to ensure that federal decisions consider the full range of consequences of actions" (CEQ, 1997). Cumulative impacts could occur through the combination of the Project's long-term direct and indirect impacts and other development that is not directly related to the Project. Short-term (construction) impacts are temporary and are not considered within the context of cumulative impacts.

This section includes a summary of the regulatory context and methodology used for the cumulative impact analysis; a description of existing conditions that form a context for the cumulative impact analysis; a listing of past, present, and reasonably foreseeable actions included in the cumulative impact analysis; an assessment, by applicable environmental category, of the potential for the Project to result in cumulative impacts and, where applicable, identification of related mitigation measures to implement with the Project. See Chapters 3, 4, and 5 for the long-term direct and indirect and short-term (construction) direct and indirect impacts.

3.17.1 Regulatory Context and Methodology

The cumulative impact assessment is consistent with *Considering Cumulative Effects Under the National Environmental Policy Act* (CEQ, 1997). A combination of analysis methodologies was employed to fully assess and quantify cumulative effects, using readily available information and data, including the following:

- **Trends Analysis.** Used to identify effects occurring over time and to project the future context of land use and environmental resources of interest.
- **Map Overlays.** Quantitative and qualitative analysis using layering of maps showing land use and resource context from various time periods. The patterns of past, existing, and future land use and the effects of development on resources of interest were analyzed to forecast future trends.

Primary data sources for this indirect and cumulative effects analysis included the following:

- 2040 Metropolitan Council Transportation Policy Plan (2015)
- Local capital improvement plans and community development data
- Environmental consequences analyses from each of the environmental categories documented in Chapters 3 and 4

The following steps were used to determine if there would be cumulative impacts as a result of the Project:

- **Identify Categories of Interest.** Categories selected for analysis include those that would be affected directly by the Project, and these categories may be potentially susceptible, resulting in a cumulative effect.
- **Analyze Existing Conditions.** The existing condition of each applicable environmental category in Chapters 3 and 4 of the Final EIS was reviewed and analyzed under the Project (see Tables 3.0-1 and 4.0-1, which describe existing conditions for applicable environmental categories included in the cumulative impacts analysis). The assessment of affected environment conducted for each environmental category, by definition, includes the impact of past actions on the condition of the environmental category. Therefore, the review focused on understanding the status, viability, and historical context of each environmental category to determine the relative vulnerability of the environmental category to cumulative impacts. The affected environment analysis methods used were quantitative and qualitative, depending on the approach used in each relevant Final EIS section.
- **Analyze Project Impacts.** The Project impacts on each applicable environmental category, as described in Chapters 3 and 4 of the Final EIS, were reviewed and analyzed under the Project (See Tables 3.0-1 and 4.0-1, which include a description of the impacts identified for the applicable environmental categories included in the cumulative impacts analysis). To anticipate how the Project may contribute to cumulative impacts, this review focused on outcomes—the state of the resource assuming Project implementation. The understanding of Project impacts combined with existing conditions and past trends was used to provide an understanding of the state of each resource and its likely vulnerability to impacts from other present or reasonably foreseeable future actions.
- **Identify and Analyze Impacts of Other Actions.** Other present actions, reasonably foreseeable future actions, and their characteristics were identified under the Project. These actions are discussed in Section 3.17.2. Most of the reasonably foreseeable future actions are transportation projects or residential or commercial development projects. The understanding of the status of the existing environmental category combined with knowledge of the types of impacts typical from transportation and land development projects provides a general basis for the understanding of the environmental category that likely will be affected.
- **Assess Cumulative Impacts.** The Project assessed the potential for cumulative impacts to applicable environmental categories by considering the combination of existing conditions, Project impacts, impacts of other present actions, and impacts of other reasonably foreseeable future actions. Based on that data, professional judgment was used to reach conclusions as to the anticipated magnitude of cumulative impacts, taking into account the extent of past, present, and anticipated future impacts. The results of the analysis, which are found in Section 3.17.3, are qualitative, reflecting the general lack of quantitative data on past, present, and future actions.

3.17.1.1 Environmental Categories of Interest

Environmental categories selected for analysis include resources that are particularly susceptible to cumulative effects and would be affected directly or indirectly by the Project, as well as one or more other projects over time that, in aggregate, would result in a cumulative effect. Environmental categories addressed in this cumulative impacts analysis include:

- Acquisitions and Displacements
- Cultural Resources
- Parks, Recreation Areas, and Open Spaces
- Visual Quality and Aesthetics
- Geology and Groundwater
- Surface Water Resources (i.e., wetlands, floodplains, public waters/water quality)
- Ecosystems
- Noise

3.17.1.2 Geographic and Temporal Boundaries for the Cumulative Impact Analysis

The cumulative impacts analysis is based on geographic as well as temporal boundaries. These boundaries were determined based on consideration of how far in distance the Project's impacts could be felt and what span of time other past, present, or reasonably foreseeable actions (other than the Project) could result in cumulative impacts.

A. Geographic Boundaries

The primary study area for the cumulative impacts analysis generally includes a one-mile buffer from the center line of the proposed light rail alignment (see Exhibit 3.17-1); however, in some cases, the specific study area for a given environmental category area was used, depending on the location of the environmental category and the degree of impact. Thus, the degree of spatial impact was considered for each environmental category within this basic framework.

B. Temporal Boundaries

The time frames established for the cumulative effects analysis include a past time frame of 1960 to the present (2016) and a future time frame of the present to 2040. Within the analysis, present actions are those defined to occur between 2016 and 2019, the construction period for the Project.

The past cumulative effects time frame was determined by examining population trends and previous key events of influence on land use and transportation in the cumulative effects study area. Beginning with the period of interstate highway construction in the 1960s and '70s, the Twin Cities region has experienced strong population growth between 1960 and 2010. At the end of the first period of interstate highway construction (1970), during which the most miles of interstate highway were constructed, the Twin Cities population was 1.9 million. By 2010 it had increased to 2.9 million (Council, 2014). This growth has influenced the land use and growth patterns of the region since that time. Table 3.17-1 shows the population trends for the State of Minnesota and for Hennepin County⁸² from 1960 through 2010.

TABLE 3.17-1
Study Area Population Trends, 1960 to 2010

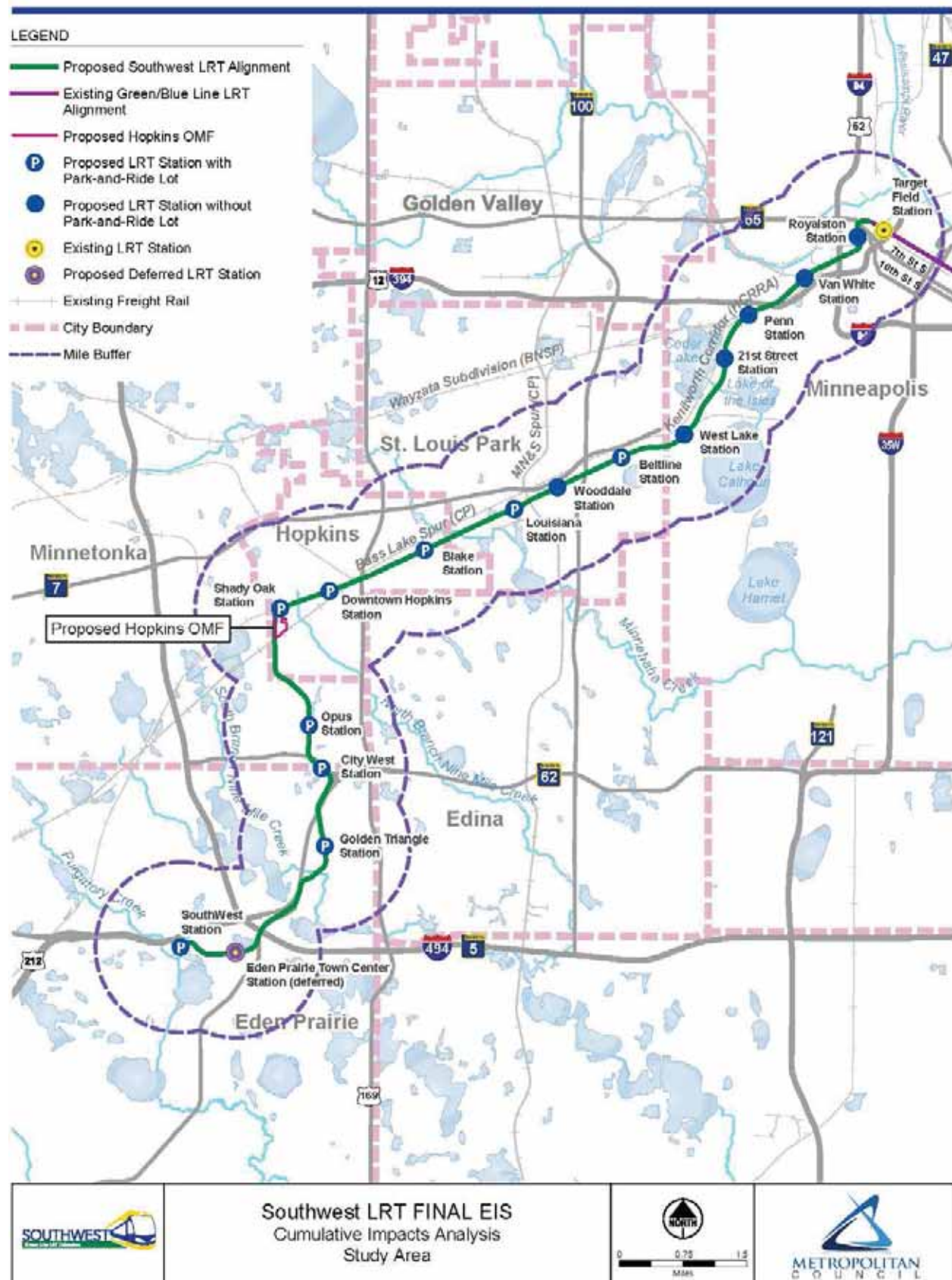
Year	State of Minnesota	Hennepin Co. Pop.
1960	4,413,864	842,854
1970	3,806,103	960,080
1980	4,075,970	941,411
1990	4,375,099	1,032,431
2000	4,919,479	1,116,200
2010	5,303,925	1,152,425
Percent Change 1960 – 2010	20%	38%
Average Annual Growth Rate	3.8%	6.5%

Source: U.S. Census Bureau

⁸² The Project is fully contained within Hennepin County, Minnesota.

EXHIBIT 3.17-1

Cumulative Impacts Analysis Study Area



The future cumulative effects time frame, from 2020 to 2040, is bounded by the extent of regionally approved population and land use projections prepared as part of the Council's regional development framework, Thrive 2040. Over the 20 years from 2020 to 2040, continued growth is projected for the overall area. The 2010 (existing) population of the Project corridor is 547,510 (229,974 households). In 2040, the population of the corridor is expected to increase to 722,420, an increase of 32 percent from 2010 (see Chapter 1, Table 1.4-1).

Within the cumulative effects study area, population is projected to increase by approximately 41 percent between 2012 and 2040, and employment is projected to increase by 43 percent (Table 3.17-2).

TABLE 3.17-2

Overall Cumulative Effects Study Area 2020-2040 Population and Employment Projections

City	2010 Population	2040 Population Forecast	2010-2040 Population % Change	2010 Total Employment Estimate	2040 Total Employment Estimate	2010-2040 Employment % Change
Eden Prairie	47,941	53,000	10.6%	47,457	56,100	18.2%
Minnetonka	49,734	64,500	29.7%	44,228	63,200	42.9%
Hopkins	17,591	19,900	13.1%	11,009	16,200	47.2%
St. Louis Park	42,250	51,300	21.4%	40,485	46,700	15.4%
Minneapolis	382,578	459,200	20.0%	281,732	350,000	24.2%
Hennepin County	1,152,425	1,405,060	21.9%	805,089	1,032,580	28.3%
Study Area	135,267	190,540	40.9%	116,915	167,590	43.3%

Source: Metropolitan Council, Thrive 2040 (2015).

3.17.2 Past, Present, and Reasonably Foreseeable Future Actions

3.17.2.1 Past Actions

The passage of the Federal Aid Highway Act of 1956 and the start of Interstate construction the same year strongly influenced the pace and location of growth that transformed the Twin Cities region. The period of Interstate construction and in the Twin Cities region extended from 1956 to 1996. According to *Politics and Freeways: Building the Twin Cities Interstate System*, the years of Interstate construction can be grouped into three periods, mega-projects (from 1956 to the late 1960s), the era of expanding the debate (from 1970 to 1990), and the era of falling behind (1990s) (University of Minnesota, 2006). Accompanying the expansion of the Interstate system in the Twin Cities region was the expansion of U.S. highways and trunk highways that provided access to the Interstate system. The beginning of the past actions period is 1960 and the end of the period is 2016, which is just before this Project's proposed start of construction.

The Interstate construction period (beginning in approximately 1960) was selected as the core of the past actions period because the growth it helped spark in the Twin Cities region can be viewed as contributing to the need for this Project. Early evidence of the impact of the Interstate system can be seen in the 30 percent rise in total work trips between 1960 and 1970. The pattern of increase within the region kept pace with the changing population distribution. The greatest increases occurred in trips from the center cities to the suburban ring, and within the suburban ring. Many of the new trips used private automobiles. The proportion of trips by automobile increased 52 percent between 1960 and 1970 (United States Congress Office of Technology Assessment, 1976). At the end of the first period of Interstate construction (1970), during which the most miles of Interstate were constructed, the Twin Cities population was 1.9 million. By 2010 it had increased to 2.9 million (Council, 2014).

The following are the major transportation projects, land use policies, and events that contributed to the changes in land use patterns and resource context within the region between 1960 and 2016:

- 1956 – Passage of the Federal Aid Highway Act
- 1968 – I-94 completed
- 1966 – I-35W/Highway 62 (Crosstown Commons) completed
- 1973 – I-35E completed

- 1991 – I-394 completed
- 2004 – METRO Blue Line (Hiawatha LRT) Completed
- 2009 – Northstar Commuter Rail Line Completed
- 2014 – METRO Green Line (Central Corridor LRT) Completed

3.17.2.2 Present Actions and Reasonably Foreseeable Future Actions

Present projects, defined as those occurring during the Project's construction period (2017-2019), are described in Table 3.17-3. Present projects are a mix of public transportation projects and private development projects. Reasonably foreseeable future projects are those that would be constructed between 2020, this Project's opening year, and 2040, the planning horizon for the Southwest LRT Project. Table 3.17-4 lists the reasonably foreseeable actions. Present and reasonably foreseeable actions were obtained from the Council's 2040 Transportation Policy Plan (Council, 2015e), approved capital improvement plans, and development plans from local agency with jurisdiction in the cumulative impacts study area.

TABLE 3.17-3
Summary of Present Actions (year 2017-2019)

Agency	Project	Est. Timing	Description
Public Actions			
City of Eden Prairie	West 62nd St Improvements	2018	Roadway reconstruction and new multiuse trail.
City of Eden Prairie	Valley View Rd and Topview Rd Intersection Improvements	2018	Lane addition and intersection improvements.
City of Eden Prairie	Prairie Center Dr and Preserve Blvd Intersection Improvements	2017	Addition of double left turn lanes.
City of Eden Prairie	Prairie Center Dr and Franlo Rd Signal	2017	New traffic signal and geometric revisions.
City of Eden Prairie	Medcom Blvd Extension to Franlo Rd Improvements	2017	New roadway connection.
City of Eden Prairie	West 70th St Improvements	2015-2018	Roadway extension and new pedestrian and bicycle facilities.
City of Minnetonka	Opus Area Rd and Bridge Improvements	2016-2019	Road and bridge improvements, new trails, and road rehabilitation.
City of Minnetonka	Shady Oak LRT Station Area Infrastructure	2017-2018	Local share of improvements related to Southwest LRT Project.
City of Minnetonka	Opus LRT Station Area Infrastructure	2016-2020	Bridge replacement, one-way roadway reversal, trail, utility, and trail lighting improvements, street rehabilitation, and street light upgrades.
City of Hopkins	8th Ave South LRT Corridor Redevelopment/The Artery	2017-2020	Roadway reconstruction, new two-way cycle track, enlarging the pedestrian space, adding landscaping and stormwater treatment, access modifications, and utility and drainage improvements.
City of Hopkins and the Minnehaha Creek Watershed District	Blake Rd Corridor Cold Storage Site	2015-2018	16.9-acre industrial redevelopment, which will treat the stormwater that currently drains untreated directly into the creek by using pipes to redirect that runoff to a stormwater infiltration basin.
City of Hopkins, in partnership with the cities of Edina and St. Louis Park, Hennepin County, MnDOT, the Minnehaha Creek Watershed District,	Blake Rd Corridor Improvements	2017-2018	Roadway reconstruction to provide enhanced accommodations for pedestrians, bicycles, and buses, improve access to adjacent neighborhoods, provide the necessary infrastructure to support redevelopment and enhance economic growth along the corridor, improve and enhance traffic flow at major

Agency	Project	Est. Timing	Description
Three Rivers Park District, and the Southwest Project Office			intersections/interchanges, and provide for access to the proposed Blake Station.
City of Hopkins	County Road 3 Improvements	2018	New signalized intersection and roadway reconfiguration.
City of Hopkins	6th St S Improvements	2018	Roadway reconstruction and box culvert creek crossing replacement.
Hennepin County	METRO Blue Line Extension (Minneapolis to Brooklyn Park)	2018-2022	New 13-mile LRT line with 11 new stations.
Metro Transit	Penn Ave Arterial Bus Rapid Transit (Minneapolis to Brooklyn Park)	2018	New arterial bus rapid transit improvements.
Hennepin County	Reconstruct Blake Rd from Hwy 7 to Excelsior Blvd (Hopkins)	2018	Roadway reconstruction with pedestrian and bicycle improvements.
Hennepin County	Reconstruct Excelsior Blvd from Meadowbrook Rd to west of Dakota Ave S (Hopkins and St. Louis Park)	2018	Roadway reconstruction.
Private Actions			
UnitedHealth Group	UnitedHealth Group Campus (Eden Prairie)	2012-2016	1.48 million-square foot office campus on 71 acres with four buildings built in phases over four years. Buildings 1, 2, and 3 and the parking deck were completed in fall 2015.
Presbyterian Homes and Services	Presbyterian Homes and Prairie Center Dr Streetscape (Eden Prairie)	2016	Redevelopment of the southwest quadrant of Flying Cloud Dr and Prairie Center Dr by Presbyterian Homes as a Planned United Development, including pedestrian and bicycle improvements, lighting, street furniture, kiosks, landscaping, banners, and directional signage from Columbine Rd to Flying Cloud Dr.
HealthPartners	Methodist Hospital Expansion (St. Louis Park)	2016-2018	Park Nicollet Methodist Hospital expansion on Excelsior Blvd to add two floors on the east side of the building and one floor on the west side of the building.
Hillcrest Development	Westside Center (former Nestle Building) (St. Louis Park)	2016-2018	Hillcrest Development renovation of a 256,000-square foot facility into flexible, multi-tenant industrial spaces with parking improvements and landscaping.
Anderson Companies	Oak Hill II Office Building (St. Louis Park)	2016-2018	Anderson Companies is constructing a second 21,500 square-foot medical office building at the northeast corner of the Hwy 7 and Louisiana Ave interchange.
Gatehouse Properties, Ltd.	Wooddale Flats (St. Louis Park)	2016-2018	Six townhome-style buildings with five three-story buildings and one two-story building. The first building is nearing occupancy and three others are in various stages of construction.

Source: Council, 2015.

TABLE 3.17-4
Summary of Reasonably Foreseeable Future Actions (2020 to 2040)

Agency	Project	Est. Timing	Description	Source
Public Actions				
City of Eden Prairie	Valley View Rd/ Shady Oak Rd Traffic Signal	2022	New traffic signal and turn lanes	Eden Prairie 2015-2024 Capital Improvements Plan
City of Eden Prairie	Valley View Rd/Hwy 169 Interchange	2021	Interchange reconstruction	Eden Prairie 2015-2024 Capital Improvements Plan

Agency	Project	Est. Timing	Description	Source
City of Eden Prairie	West 78th St/Den Rd Intersection	2023	New traffic signal or roundabout and related improvements	Eden Prairie 2015-2024 Capital Improvements Plan
City of Eden Prairie	West 78th St Improvement Project (Prairie Center Drive to Washington Avenue)	2019	Roadway capacity expansion and new trail	Eden Prairie 2015-2024 Capital Improvements Plan
City of Eden Prairie	Flying Cloud Dr Improvements	2024	Roadway capacity expansion	Eden Prairie 2015-2024 Capital Improvements Plan
City of Eden Prairie	Town Center N-S Road Phase II	2020	Roadway extension	Eden Prairie 2015-2024 Capital Improvements Plan
Hennepin County	Reconstruct Hwy 3 from Hwy 20 to east of Meadowbrook Dr	2019	Roadway reconstruction	Hennepin County 2015 Capital Improvement Plan
Metro Transit	Chicago Emerson-Fremont Arterial Bus Rapid Transit (Minneapolis)	2020-2024	Bus rapid transit improvements	2040 Transportation Policy Plan, Appendix C: Hwy & Transit Capital Project List (Council, 2015e)
Private Actions				
Community Housing Corporation of America, Shelter Corporation	Music Barn Apartments (Minnetonka)	Future	The three-story building will provide more affordable housing to Minnetonka residents	City of Minnetonka Planning (http://eminnetonka.com/current-projects/planning-projects/1279-music-barn-aps)
At Home Apartments, LLC	At Home Apartments (Minnetonka)	Future	The proposed project will be a three- and four-story market-rate apartment building with one level of underground parking	City of Minnetonka Planning (http://eminnetonka.com/current-projects/planning-projects/1132-at-home-apartments)
Oppidan	4900 Excelsior Blvd (St. Louis Park)	Future	Site redevelopment – new six-story mixed-use development containing 28,000 square feet of commercial space (grocery store) and 189 apartments.	City of St. Louis Park Community Development (http://www.stlouispark.org/webfiles/file/community-dev/dev_projects_update_april_2_2_2015.pdf)
Erdogan Akgue	Minnota Addition (St. Louis Park)	Future	Residential development project – 14 to 16 townhome two- and three-story units with underground parking	City of St. Louis Park Community Development (http://www.stlouispark.org/webfiles/file/community-dev/dev_projects_update_april_2_2_2015.pdf)
Bader Development	Encore / The Shoreham (St. Louis Park)	Future	2.23-acre redevelopment project consisting of three residential and two commercial properties. 5-story mixed-use building on the site with 147 residential units and a total of 20,000 square feet of commercial and medical office space	City of St. Louis Park Community Development (http://www.stlouispark.org/webfiles/file/community-dev/dev_projects_update_april_2_2_2015.pdf)
Japs-Olson Company	Japs-Olson (St. Louis Park)	Future	Redevelopment of existing 513,000-square foot facility to add 192,000 square feet of production and warehouse that bisects property	City of St. Louis Park Community Development (http://www.stlouispark.org/webfiles/file/community-dev/dev_projects_update_april_2_2_2015.pdf)
PLACE Developers	Former McGarvey Coffee Property (St. Louis Park)	Future	Mixed-use, mixed-income, creative community that incorporates a mix of renewable energy sources, possibly including an anaerobic digester, which would provide heat and power to the development	City of St. Louis Park Community Development (http://www.stlouispark.org/webfiles/file/community-dev/dev_projects_update_april_2_2_2015.pdf)

Source: Council, 2015.

In addition to the consideration of public actions, land use projections were analyzed at the traffic analysis zone (TAZ) level to identify areas for potential future private growth within the general travel shed for the Project Corridor.⁸³ Refer to Exhibit 1.4-1 and Section 1.4 for additional information on the Project Corridor. TAZs with population and employment growth rates of 25 to 50 percent and more than 50 percent between 2010 and 2040 were identified as growth areas. This enabled the analysis to focus on those areas most likely to experience future growth and potential cumulative effects on resources of interest. In general, there are concentrations of potential growth areas located along the proposed LRT alignment. Of 69 TAZs within the cumulative impacts study area, 31 TAZs were identified as potential growth areas based on population and 22 TAZs were identified as growth areas based on employment. These TAZs are projected to accommodate approximately 91 percent of population growth and 98 percent of employment growth within the cumulative impacts study area between 2010 and 2040.

3.17.3 Cumulative Effects Assessment

Planned transportation and other governmental development and private development in the cumulative impacts study area would occur independently of the Project. These developments are located in communities along the proposed light rail alignment. Projections of anticipated land development are based on current local and regional land use and growth management objectives and regulations, which already consider the implementation of the Project. The Project would have an incremental effect on resources of interest in the context of other past, present, and reasonably foreseeable actions in the cumulative impacts study area. In general, direct and indirect adverse impacts generated by the Project will be localized, and the Project is not anticipated to generate substantial cumulative impacts for the environmental categories evaluated. The assessment of cumulative impacts of the Project and other past, present, and reasonably foreseeable actions is presented by environmental category in the following subsections.

3.17.3.1 Acquisitions and Displacements

Past projects such as the construction of the Interstate system and expansion of the trunk highway system that accompanied Interstate construction and the resulting growth in the suburban ring around the Twin Cities relocated a substantial number of residences and businesses. In the more recent past, projects like the METRO Green Line (Central Corridor LRT) resulted in property acquisition and associated displacements, and present actions such as the METRO Blue Line Extension (Bottineau LRT) will result in acquisitions and displacements.

Future projects such as the West 78th Street Improvement project and the Flying Cloud Drive project may acquire residential and commercial buildings. The 4900 Excelsior Boulevard and Encore/The Shoreham projects will require property acquisitions and have the potential to displace existing commercial and residential buildings.

As noted in Section 3.4.3.1, the Project will fully acquire 36 parcels (totaling approximately 64 acres) and partially acquire 159 parcels (totaling approximately 133.5 acres). Of these, 145 parcels (totaling approximately 126 acres) are private property and 50 parcels (totaling approximately 71.1 acres) are currently under public ownership.

Because the Project and other transportation projects that use federal funds are required by law to compensate property owners and renters for residences and businesses acquired by transportation improvements, the Project and similar federal actions would not contribute to cumulative acquisition impacts after mitigation.

⁸³ A TAZ is defined as geographic areas dividing the planning region into relatively similar areas of land use and land activity. TAZs represent the origins and destinations of travel activity within the region and include land use characteristics such as population and employment which are used for traffic analysis and forecasting. The Southwest LRT Project Corridor (see Exhibit 1.4-1) is the general travel shed that encompasses a geographic area where transit travel patterns are most likely to be affected by the alternatives under consideration throughout the Project's planning and environmental process. The travel shed is larger than the cumulative impacts study area.

The Project will implement appropriate measures to avoid, minimize, and mitigate acquisitions and displacement impacts (see Section 3.4); however, future actions other than the Project have the potential to adversely affect acquisitions and displacements in the cumulative effects study area.

3.17.3.2 Cultural Resources

Past transportation projects such as the early construction of the Interstate system and private development projects that predated the National Historic Preservation Act of 1966 and the National Environmental Policy Act of 1969 adversely affected architecture/history resources and archaeological resources. Because archaeological and architecture/history resources are widely distributed, present projects, such as the METRO Blue Line Extension also could affect cultural resources. Future projects may affect cultural resources, but because the historical significance of structures and the presence and significance of archaeological resources within the footprint of a project are generally not evaluated until a project is underway, it is difficult to reliably predict future projects' contribution to cultural resource cumulative impacts. Depending on the funding source for future projects, cultural resources are afforded some level of protection by federal, state, and local cultural resource regulations.

Based on results of the effects assessments and implementation of the measures included in the Section 106 MOA, FTA has determined, in consultation with the MnHPO and other consulting parties, that the Project will have No Adverse Effect on 25 historic resources and an Adverse Effect on five resources, including two archaeological sites, one individual property, one historic district, and one contributing resource to that historic district. Due to the Project's adverse effect on these five resources—the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot; sites 21HE21HE0436 and 21HE0437; the Grand Rounds Historic District; and the Kenilworth Lagoon, as a contributing resource to the historic district—it has been determined that the undertaking will have an Adverse Effect on historic resources (see Section 3.5.4).⁸⁴

The Project will implement appropriate measures identified in the Section 106 Memorandum of Agreement to minimize or mitigate the Project's adverse cultural resource effects (see Section 3.5.5); however, future actions other than the Project also have the potential to adversely affect cultural resources in the cumulative effects study area.

3.17.3.3 Parks and Recreation Areas and Open Spaces

Past federal and state transportation projects, particularly those constructed before the implementation of the Section 4(f) regulations (1966) and the National Environmental Policy Act (1969), and private development would have adversely affected parks and recreation areas. Even after the passage of Section 4(f) regulations, present publicly and privately funded projects still have the potential to adversely affect parks and recreation areas; however, at least for projects using federal funds, there is the potential for minimizing or mitigating adverse effects. There are also projects that expand parks and trails countering the impacts of other projects. For example, when complete, the Cottageville Park improvements in the City of Hopkins will increase the size of the park by three times helping to reverse the loss of parkland in other areas of the cumulative impacts analysis area.

Currently, the reasonably foreseeable projects in Table 3.17-3 are not expected to adversely affect parks or recreation areas. In fact, the projects may contribute to recreation areas. For example, the West 78th Street Improvement Project will include a new trail to extend the trail from the east end of the project toward Prairie Center Drive.

⁸⁴ Through the Section 106 process to resolve the adverse effect to the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot, including coordination with the Project's Section 106 consulting parties, measures were incorporated into the Project's design and Section 106 MOA that avoid the adverse effect to the property. See Section 3.5 of this Final EIS for additional information about the Project's Section 106 process and analysis and Appendix H for the Section 106 MOA.

As described in Section 3.6.3 and summarized in Table 3.0-1, the following parks, recreation areas, and open space properties will be affected as a result of the Project, prior to mitigation. Refer to Table 3.6-2 for descriptions of these facilities and more detail regarding impacts.

- Purgatory Creek Park in Eden Prairie
- Nine Mile Creek Conservation Area in Minnetonka
- Unnamed Open Space A in Minnetonka
- Unnamed Open Space B in Minnetonka
- Overpass Skate Park in Hopkins
- Minnehaha Creek Open Space in St. Louis Park
- Edgebrook Park in St. Louis Park
- Jorvig Park in St. Louis Park
- Lilac Park in St. Louis Park
- Park Siding Park in Minneapolis
- Kenilworth Channel/Lagoon in Minneapolis
- Cedar Lake Park in Minneapolis
- Bryn Mawr Meadows Park in Minneapolis

Population growth in the cumulative effects analysis area caused by new residential development surrounding the proposed light rail stations may increase demand and capacity pressure on public parks and recreation facilities. Due to limited land availability and funding for acquisitions, the City of Minneapolis and other communities are limited in park expansion opportunities to meet recreational demands. These limitations have the potential to result in a long-term shortfall in the ratio of parks and recreation areas to population.

The Project will not contribute to substantial cumulative park and recreation area impacts directly related to acquisitions because the magnitude of the acquisition impacts is low (approximately 7 acres), as compared to the size of the parks in the cumulative effects study area (approximately 1,190 acres; see Table 3.1-1). The Project will implement appropriate measures to avoid, minimize, and mitigate other park, recreation areas, and open space impacts not related to acquisitions (see Section 3.6); however, future actions other than the Project have the potential to adversely affect parks, recreation and open space in the cumulative effects study area.

3.17.3.4 Visual Quality and Aesthetics

Past public and private actions in the Minneapolis Downtown Fringe landscape unit have transformed the visual environment by increasing the density and height of buildings in the downtown area. Southwest of downtown, particularly areas closer to the Project's west terminus, past actions created a transition in the visual environment from rural to suburban/urban. While the visual impacts of more recent past projects, present actions, and reasonably foreseeable projects along the proposed LRT alignment may be less visually transformative than past projects because they occur in a developed urban and suburban physical environment, they still have the ability to create visual impacts. However noting the severity of the visual impact is dependent on the scale and massing of the development.

The analysis conducted to evaluate the Project's effect on visual quality and aesthetics included long-term direct and indirect impacts. The analysis evaluated 19 representative viewpoints along the Project in Eden Prairie, North Eden Prairie/Minnetonka/South Hopkins, Hopkins, St. Louis Park, the Kenilworth Corridor, and the Minneapolis downtown fringe (see Section 3.7.2). Results of the analysis found that of the 19 viewpoint impacts assessed, seven will be "low," six will be "moderate," and six will be "substantial."

The Project will implement appropriate measures to avoid, minimize, and mitigate visual quality and aesthetics impacts (see Section 3.7.4); however, future actions other than the Project have the potential to adversely affect visual quality and aesthetics in the cumulative effects study area.

3.17.3.5 Geology and Groundwater Resources

As described in Section 3.8.3.1, long-term direct geology impacts are organized into four categories: (1) uneven ground settlement; (2) tunnels and underpasses, (3) engineered cut-and-fill locations, and (4) bedrock and karst. Past public and private projects have affected geology (soils) in a manner similar to the Project. Compressible soils and other soils unsuitable for construction have been excavated and replaced with suitable fill. In addition, past projects have disturbed soil geology while constructing cuts and fills required to build roadways and private development projects. While past projects would have affected geology, they would not have had adverse geology impacts, because they would have been subject to an environmental review process and would have included the appropriate avoidance measures and BMPs. It is not possible to know whether past actions encountered karst conditions, which could be an adverse geology impact.

It is more difficult to determine the impact of past actions on groundwater; however, it would be reasonable to expect that, like the Project, shallow groundwater was encountered during construction and temporary groundwater pumping was needed to create dry conditions needed for construction.

Recent past, present and reasonably foreseeable actions, whether state/federal transit (e.g. METRO Blue Line Extension) or roadway projects or residential/commercial developments would be expected to have similar soil and groundwater impacts to the Project's impacts described below.

The generally compatible geologic conditions along the proposed light rail alignment would accommodate construction and operations thus limiting long-term direct geology impacts.

Removing the compressible soils and replacing them with suitable fill in addition to activities that will disturb soil geology by constructing tunnels, underpasses, and regrading soil through cut-and-fill activities are not expected to create adverse geology impacts. No long-term direct groundwater impacts are expected. No long-term indirect impacts to geology or groundwater are expected. As a result, the Project will not contribute substantially to cumulative groundwater and geology effects (see Section 3.8).

3.17.3.6 Surface Water Resources

Well before the start of Interstate construction in the Project corridor, surface water resources (wetlands, floodplains, public waters/water quality) were being adversely affected by development activities, particularly in Hennepin County, the most populous county in the state. The conversion of the Corridor's original land cover, including maple and basswood forest, prairies, and wetlands, to agricultural land began the process of adverse impacts to surface water resources that intensified with the increase in urban development. The incomplete understanding of the inherent value of surface water resources and the lack of comprehensive environmental regulations at the local, state, and federal levels resulted in a generally degraded condition of surface water resources through the first period of Interstate construction in the Project corridor. As an example of past actions on water resources, it has been estimated that Minnesota has lost approximately half of its original pre-settlement wetlands due to draining and filling for agriculture and development.⁸⁵ A similar level of impact would be expected to have occurred in the Project corridor.

The passage of legislation, such as the 1972 Clean Water Act and the 1991 Minnesota Wetland Conservation Act, increased protection of water resources; however, water resource impacts, particularly on water quality, continue.

As a result of the Project's long-term direct impacts, fill will be placed in 13 locally regulated wetlands and 17 federally regulated wetlands totaling about 6.5 acres. From a long-term indirect impact standpoint, the Project may affect wetlands by facilitating future development. The Project will add approximately 40 acres of impervious surface that may adversely affect water quality. In addition, the operation of light rail transit may affect the hydrology and connectivity of public waters along the light rail alignment. If commercial, transportation, and industrial activities along the light rail alignment increase as a result of the Project,

⁸⁵ *Status and Trends of Wetlands in Minnesota: Wetland Quantity Trends from 2006 to 2011*, Minnesota DNR, May 2013.

there may be long-term indirect impacts on surface water resources as a result of new point and non-point sources of pollution. Finally, the Project will place 7,296 cubic yards of fill into 15 locally regulated 100-year floodplains adjacent to the LRT alignment. The Project may result in indirect impacts to floodplains by facilitating future development.

The apparent success of the state's no-net loss goal for wetlands is evidence that this Project and others have reduced the potential for wetland acreage cumulative impacts. The State of Minnesota has developed a wetland status and trends monitoring program (WSTMP) to provide scientifically-sound data regarding long-term changes in wetland quantity and quality. The Minnesota program mapped land cover change for 4,990 plots over repeating 3-year sampling cycles. In the first two complete sampling cycles, 2006–2008 and 2009–2011, a small, but statistically significant net gain in wetland acreage was identified. The total wetland gain within the sample plots was 200.4 acres and total wetland loss was 77.4 acres, resulting in a net gain of 123 acres. Extrapolating these results statewide indicates that Minnesota had a net gain of 2,080 acres of wetland during the study period, or about 0.02 percent of Minnesota's total wetland area of 10.62 million acres.⁵

There are local projects that would have a beneficial impact on water quality. As part of a larger effort to restore Minnehaha Creek through St. Louis Park and Hopkins, the Minnehaha Creek Watershed District (MCWD) is working to restore more than 1,000 feet of Minnehaha Creek adjacent to the Blake Road Corridor Cold Storage Site, an industrial property between Blake Road and the North Cedar Lake Regional Trail. The MCWD purchased the 16.9-acre property in 2011 and plans to use the property to treat a substantial amount of polluted stormwater from surrounding neighborhoods and to restore the channel. Projects like the Blake Road Corridor Cold Storage Site and the Cottageville Park Improvement project, which is also increasing green space along Blake Road to improvement Minnehaha Creek water quality, help mitigate water quality impacts from other projects.

3.17.3.7 Ecosystems

Past public and private actions, particularly during the first period of Interstate construction (1956-1969) with associated expansion of the U.S. highway and trunk highway and early residential and commercial suburban development, generally would have had a greater impact on ecosystems because the projects would have affected better quality habitat in more rural areas. Because the concept of protecting threatened and endangered (T&E) species was in its very early days between 1956 and 1969, the Endangered Species Preservation Act of 1966 was the predecessor to the Endangered Species Act of 1973, and it is difficult to speculate on public transportation and private development projects' impact on T&E species during that period. Public transportation and private development projects after 1969 continued to adversely affect ecosystems, but in general as habitat areas became smaller and more disturbed, the projects' impacts on the function and value of the ecosystems have been less pronounced.

The Project will be located mostly in areas that have been previously disturbed or developed with impervious surfaces and buildings. Portions of the Project will be within or near limited pockets of aquatic habitats and natural or open areas with vegetative cover that may provide foraging, migrating, or nesting habitat for wildlife. Long-term impacts to habitat include removal, conversion, degradation, or fragmentation of existing habitat. In addition, 42.9 acres of habitat associated with a Regionally Significant Ecological Areas will be converted to Project right-of-way. The Project is not expected to result in long-term direct or indirect impacts on state or federal protected T&E species or migratory birds because the Project will utilize appropriate best management practices to avoid impacts on listed species that have the potential to occur in the Project area. The Project will implement appropriate measures to avoid, minimize, and mitigate ecosystem impacts (see Section 3.10); however, future actions other than the Project have the potential to adversely affect ecosystems in the cumulative effects study area.

3.17.3.8 Noise

Although noise data for past transportation projects is not readily available, it is expected that past public transportation actions such as the early construction of the Interstate system and associated expansion of

the U.S. highway and trunk highway systems resulted in noise levels approaching or exceeding the FHWA Noise Abatement Criteria for sensitive receptors adjacent to the transportation improvements.

It is also expected that more recent past transportation projects, present actions, and reasonably foreseeable transportation projects have or will also result in noise impacts to sensitive receptors without evaluating and or constructing noise barriers.

The Project will implement appropriate measures to avoid, minimize, and mitigate noise impacts (see Section 3.12), as appropriate; however, future actions other than the Project have the potential to adversely affect noise in the cumulative effects study area.

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4 Transportation Analysis and Effects

4.0 Introduction

This chapter discusses the transportation-related analysis and effects associated with the No Build Alternative and the Southwest Light Rail Transit (LRT) Project (Project).¹ This chapter includes six sections, each of which provides an overview of applicable methods and regulations, a description of the affected environment, an analysis of the transportation-related consequences that will result from the Project, and committed mitigation measures to address transportation-related adverse impacts. The analysis of impacts in each section covers long-term and short-term (construction) direct and indirect impacts. Section 3.17 addresses transportation-related cumulative impacts related to the Project. This chapter includes the following sections:

- 4.1 Transit
- 4.2 Roadway and Traffic
- 4.3 Parking
- 4.4 Freight
- 4.5 Pedestrian and Bicycle
- 4.6 Safety and Security

Chapter 2 provides a description of the No Build Alternative and of the Project, both of which were used as the basis for the analysis within this chapter. Construction activities that will be associated with the Project are also described in Chapter 2. Chapter 3 addresses the environmental-related analysis and effects associated with the No Build Alternative and the Project that are not directly related to transportation. Appendix E includes the Preliminary Engineering Plans for the Project and illustrates the extent of long-term and temporary construction-related improvements that will result from the Project.

Following is a list and definition of key terms used throughout this chapter:

- **Long-term impacts** will continue to occur after construction is complete
- **Short-term impacts** will be associated with construction activities and will be temporary
- **Direct impacts** will occur at the same time and place as the proposed action
- **Indirect impacts** will occur later in time or will be further removed in distance from the proposed action
- **Study area** is the area where the impact analysis focused on, specific to each transportation category
- **Limits of disturbance** is the area where the Project will result in permanent or temporary ground disturbances
- **Avoidance** is the act of avoiding impacts to or keeping away from something or someone
- **Minimization** is a measure to reduce the severity of adverse impacts
- **Mitigation** is a measure to alleviate adverse impacts that remain after minimization

A. Overview of the Project's Impacts

Table 4.0-1 provides a summary of the Project's impacts for each transportation category within this chapter. Long-term and short-term impacts, project avoidance and minimization commitments, and

¹ The Project, as evaluated in this Final EIS, includes both the Locally Preferred Alternative (LPA) and the Locally Requested Capital Investments (LRCIs) described in Sections 2.1.1 and 2.1.2. Exhibit 2.1-6 conceptually shows the components of the Project. As described in Section 2.1.1, the Eden Prairie Town Center Station and associated improvements are deferred and are not expected to be in place when the Project opens in 2020. The station and associated improvements are planned to be in place by 2040.

mitigation measures are identified for each transportation category. See the corresponding sections of Chapter 4 for a more detailed description of the Project's anticipated impacts, avoidance and minimization commitments, and mitigation measures, as well as exhibits illustrating geographic features referenced in the table. Unless otherwise noted in this chapter's sections, there have been no major changes in the environmental analyses since publication of the Supplemental Draft EIS.

B. Overview of the No Build Alternative's Impacts

This section provides a consolidated discussion of the No Build Alternative.² It includes an overview by transportation category of changes in existing conditions compared to conditions under the No Build Alternative in 2040. The No Build Alternative represents future conditions in 2040 within the corridor if the Project is not implemented and it provides the basis against which the Project is compared. The definition of the No Build Alternative includes all the proposed and funded projects in the TPP³ except the Project. That is, the No Build Alternative only differs from the Project in that the No Build Alternative does not include the construction and operation of the Project. Section 2.1.2 provides a more detailed description of the No Build Alternative, and Chapters 5 and 6 of the TPP list and illustrate respectively the funded highway and transit projects in the 2040 TPP that are included in the No Build Alternative (identified as Current Revenue Scenario Investments).

Following are some of the projects included in the No Build (2040) transportation networks that are used for travel demand forecasting and related analyses but that are not included in the existing (2010) transportation networks:

- Highways
 - I-35W Southbound from I-94 to 46th Street
 - Highway 100 from 36th Street to Cedar Lake Road
 - I-494 Capacity Enhancements
 - Reconstruction of the I-494/Highway 169 Interchange
- Transit
 - METRO Gold Line
 - METRO Red Line Extension
 - A-Line, Snelling Avenue Arterial Bus Rapid Transit
 - C-Line, Penn Avenue Arterial Bus Rapid Transit
 - Chicago Emerson-Fremont Arterial Bus Rapid Transit

Following is a summary of conditions under the No Build Alternative for the transportation categories addressed in this chapter, assessing differences under the No Build Alternative compared to the Project and describing key changes from existing conditions to conditions under the No Build Alternative in 2040.⁴

- **Public Transportation.** Annual transit vehicle hours and miles would increase by nearly 1 percent per year between the existing level of service and the 2040 No Build Alternative. While many routes in the corridor would undergo no change or changes in service frequency, Routes 12, 17, 604, and 614 would see major changes. For Routes 12 and 17, service frequency would increase and service hours would be

² This section addresses conditions under the No Build alternative for the six transportation categories addressed in this chapter. Sections 4.1 Public Transportation and 4.2 Roadways and Traffic also provide a quantitative comparison of the Project and the No Build Alternative. Chapter 3 addresses 16 environmental categories under the No Build Alternative and the Project.

³ If those projects are implemented, the sponsors of those projects would be responsible for complying with applicable federal and state environmental requirements, such as the National Environmental Policy Act (NEPA) and the Minnesota Environmental Policy Act (MEPA), including disclosure of the projects' environmental impacts.

⁴ The study areas referenced in this summary are defined in the transportation categories' respective *Regulatory Context and Methodology* sections.

extended. For Route 604, weekend service would be added. For Route 614, Sunday service would be added. Additionally, one new crosstown route (Route 620) to connect Hopkins and Eden Prairie, one new circulating loop route (Route 26) in North Minneapolis, and three new arterial bus rapid transit (BRT) lines would be added to existing service. SouthWest Transit (Routes 684 – 699) would add service on seven routes. See Exhibit 4.1-4, which illustrates the No Build Alternative bus operation plan. The introduction of arterial bus rapid transit on the C line and on Fremont and Emerson Avenues would decrease the frequency of service on Route 5 and 19 to every 30 minutes.

As noted in Table 4.1-2, there would be approximately 94,340 regional average weekday transit trips (originating rides) in 2040 under the No Build Alternative, compared to approximately 56,910 transit trips in 2010. And as noted in Table 4.1-4, overall average weekday peak direction transit mode share between the corridor and downtown Minneapolis should increase from approximately 18 percent in 2010 to approximately 25 percent under the No Build Alternative in 2040. Existing and future travel times for trips connecting Eden Prairie, Minnetonka, Hopkins, and St. Louis Park with each other and Minneapolis confirm the adverse effects of congestion and circuitous travel on reliable bus service as compared to private vehicle travel. Examples of existing (2010) and No Build Alternative (2040) average weekday bus and automobile travel times in the peak evening travel hour can be found in Table 1.6-1.

- **Roadways and Traffic.** The Metropolitan Council 2040 TPP indicates that the existing roadway network is expected to experience a substantial increase in vehicle demand by the year 2040. In 2010, the regional vehicle miles traveled (VMT)⁵ on the regional roadway network was approximately 72.9 million daily VMT. By 2040, the regional VMT is forecast to increase approximately 23 percent to 89.4 million daily VMT. Table 4.2-2 shows the existing regional population and regional travel demand on the roadway network in 2010 (actual)⁶ and 2040 (forecast), in terms of average weekday vehicle trips, daily VMT, and daily VMT per resident. Exhibit 4.2-2 illustrates the substantial increase in congestion on principal arterials in the region by 2040, compared to 2013. Exhibit 4.2-3 illustrates existing and No Build Alternative average daily traffic volumes in the study area (2013 and 2040, respectively); all of those traffic volumes are projected to increase from 2013 to 2040.

According to the Metropolitan Council Transportation Division, travel times from Eden Prairie for cars are expected to increase by over 10 percent under the No Build Alternative, from 30 minutes in 2010 to 34 minutes in 2040 during peak periods. For example, an automobile trip during the p.m. peak hour from downtown Minneapolis or St. Paul to Eden Prairie is estimated to increase by approximately 9 percent and 15 percent by 2040, respectively, compared to existing conditions (changing from approximately 27.0 minutes to 29.5 minutes and from 35.3 to 60.1 minutes, respectively). Further, a reverse commute from the Opus development in Minnetonka and Eden Prairie to North Minneapolis during the p.m. peak hour in 2040 is projected to increase by approximately 15 percent and 18 percent, respectively (changing from 25.7 minutes to 29.7 minutes and from 30.8 minutes to 36.4 minutes, respectively). As shown in Table 4.2-3, nine intersections in the study area would operate at level of service (LOS) E or F in 2040 under the No Build Alternative, compared to two intersections in 2014.

- **Parking.** Under the No Build Alternative, there would be no displacement of on-street and off-street parking spaces, because the Project would not be constructed. There would also be no new park-and-ride lots associated with new light rail stations in the corridor. Other transportation and development projects that would occur under the No Build Alternative could affect existing on-street and off-street parking supply and demand, depending on the type and location of the project. Development projects will be required to comply with applicable related regulations, such as minimum off-street parking requirements for commercial developments.

⁵ VMT is a measurement of miles traveled by vehicles in a specified region for a specified time period. One vehicle traveling one mile equals one VMT.

⁶ Based on data included in the 2040 TPP (2015). The base year for the analysis in this document is 2010.

- **Freight Rail.** Under the No Build Alternative, there would be no direct changes to freight rail facilities and operations in the corridor, because the light rail would not be implemented in the corridor. Existing freight rail facilities and operating conditions would continue (see Table 4.4-1), and changes to those conditions under the No Build Alternative in 2040 would be the result of changes in freight movement market conditions and decisions by freight railway owners and operators.
- **Pedestrian and Bicycle.** Under the No Build Alternative, there would be no direct changes to the study area's pedestrian and bicycle facilities, because light rail would not be implemented in the corridor. Other pedestrian and bicycle improvements, roadway and transit projects, and development projects that would occur under the No Build Alternative would change pedestrian and bicycle facilities in the corridor, compared to existing conditions, depending on the scope and location of the projects. In particular, there will be improved and new pedestrian facilities in the corridor as per the Council's 2040 TPP and local capital improvement programs. Development projects will be required to comply with applicable related local requirements, which could result in improved or new pedestrian and/or bicycle facilities.
- **Safety and Security.** Under the No Build Alternative, there would be no additional light rail at-grade crossings of roadways, because the Project would not be constructed and the light rail alignment would not be extended into the corridor. As a result, there would be no additional potential delay for emergency vehicles at new light rail at-grade crossings, and due to continued growth in population and employment in the study area, there would be increases in public services demands, compared to existing conditions.

TABLE 4.0-1

Project Impacts, Commitments, Mitigations by Transportation Category^a

Transportation Category		Summary of Impacts, Commitments, and Mitigation Measures
4.1 Transit	Long-term Direct Impacts	<ul style="list-style-type: none"> Changes to Metro Transit or SouthWest Transit facilities and service to accommodate and coordinate with the proposed light rail extension No adverse impacts
	Long-term Indirect Impacts	<ul style="list-style-type: none"> Beneficial effects: <ul style="list-style-type: none"> Increase in transit trips Ridership and operations changes to the existing local bus system Demand for pedestrian and bicycle access to new light rail stations will increase Anticipate additional increase in transit ridership due to potential increases in development density or redevelopment in areas surrounding light rail stations No adverse impacts
	Short-term impacts	<ul style="list-style-type: none"> Intermittent impacts to bus operations on routes within the construction area, such as temporary stop relocations or closures, route detours, or suspensions of service on segments of routes operating on streets where light rail facilities are constructed
	Commitments	Short-term: <ul style="list-style-type: none"> Reevaluate transit routes and construction plans to minimize disruption to transit service
	Mitigation Measures	Long-term: <ul style="list-style-type: none"> Follow Federal and local procedures for route modifications or the suspension of transit service, including completing a Title VI analysis and outreach plan to determine how service changes would affect low-income and minority communities and communicate these changes prior to implementation Short-term: <ul style="list-style-type: none"> Develop and implement the Construction Mitigation Plan and a Construction Communication Plan. Strategies may include: <ul style="list-style-type: none"> Issue construction updates and post them on the Project website Provide advance notice of roadway closures, driveway closures and utility shutoffs Conduct public meetings Establish a 24-hour construction hotline Prepare materials with information about construction Address property access issues Assign staff to serve as liaisons between the public and contractors during construction Post information at bus stops indicating temporary stop closures and/or detour details Publish information in advance of bus detours on Metro Transit's website and in its on-board information brochure Develop and implement a construction staging plan, which will be reviewed with the appropriate jurisdictions and railroads. Components of a construction staging plan include traffic management plans and a construction timeline.
4.2 Roadways and Traffic	Long-term Direct Impacts	<ul style="list-style-type: none"> Physical modifications that will affect local circulation No adverse impacts
	Long-term Indirect Impacts	<ul style="list-style-type: none"> Beneficial effects: <ul style="list-style-type: none"> Decrease in auto trips on surrounding roadway network as people switch from auto to transit Additional vehicle traffic from anticipated new development surrounding the light rail stations No adverse impacts due to capacity upgrades and improvements in locations that could realize increased traffic generated in station areas
	Short-term Impacts	<ul style="list-style-type: none"> Short-term traffic impacts from construction activities such as: <ul style="list-style-type: none"> Relocation of existing utilities

Transportation Category		Summary of Impacts, Commitments, and Mitigation Measures
		<ul style="list-style-type: none"> - Removal of existing surface features within the right-of-way or between the curbs - Excavation and construction of new subsurface features required for the LRT system and adjacent roadways including stormwater drainage systems and various electrical facilities - Construction of new light rail track, stations, electrical power systems, roadways, and bridges - Installation of above ground light rail system operation facilities • Temporary, partial and full closures of existing streets and driveways
	Commitments	Long-term: <ul style="list-style-type: none"> • Implement roadway and intersection improvements to avoid any new or worsened congested intersections, compared to the No Build Alternative in 2040
	Mitigation Measures	Short-term: <ul style="list-style-type: none"> • Develop and implement the Construction Mitigation Plan, Construction Communication Plan, and construction staging plan (see 4.1) • Comply with applicable state and local regulations related to the roadway closures and the effects of construction activities, including MnDOT, Hennepin County, and all municipalities • Contractor compliance with all guidelines established in the Minnesota Manual on Uniform Traffic Control Devices (2015) • Appropriate jurisdictions to review construction staging and mitigation documents • Secure required permits • Contractor to develop traffic control plans based on information identified in the construction documents and the Construction Mitigation Plan. Traffic control plans will be reviewed by appropriate jurisdictions and the Council prior to initiation of construction activities.
4.3 Parking	Long-term Direct Impacts	<ul style="list-style-type: none"> • Removal of 692 off-street parking spaces at 16 properties • Removal of an existing publicly owned park-and-ride lot (52 spaces) • Addition of 98 on-street parking spaces at five locations • Removal of 252 on-street parking spaces at nine locations • New park-and-ride lots at nine light rail stations, for a combined addition of 2,487 new park-and-ride spaces
	Long-term Indirect Impacts	<ul style="list-style-type: none"> • Could affect supply of and demand for off-street and on-street parking around station areas as a result of development/redevelopment • Spillover parking could occur at stations where there are no park-and-ride lots planned • Spillover parking could occur in the vicinity of the proposed SouthWest and Beltline Stations
	Short-term Impacts	<ul style="list-style-type: none"> • Temporary removal of on-street parking spaces to facilitate construction
	Commitments	None
	Mitigation Measures	Long-term: <ul style="list-style-type: none"> • Compensate business owners for loss of off-street parking spaces, based on the terms of the purchase agreement between the Council and property owner • Complete a Regional Park-and-Ride System Report on an annual basis. As part of this effort, the Council and Metro Transit will collaborate with regional transit partners, local governments, and MnDOT to conduct an annual regional park-and-ride survey, which tracks facility use and emerging travel patterns by park-and-ride users across the region to identify the appropriate mitigation, as needed and where feasible. The results of this survey are published in the annual report. • Develop a joint use agreement to share parking with SouthWest Transit for the park-and-ride lot adjacent to the station • Identify suitable replacement locations prior to any displacement of on-street handicap parking spaces or on-street truck loading zones Short-term:

Transportation Category		Summary of Impacts, Commitments, and Mitigation Measures
		<ul style="list-style-type: none"> Develop a Construction Mitigation Plan that will address temporary on-street parking loss during the construction of the Project (see 4.1)
4.4 Freight	Long-term Direct Impacts	<ul style="list-style-type: none"> Changes to existing freight rail infrastructure, such as shifting the freight mainline up to 45 feet, removing siding track, and reconstruction of existing freight rail bridges No adverse impacts as there are no substantial changes to freight rail operations
	Long-term Indirect Impacts	<ul style="list-style-type: none"> None^b
	Short-term Impacts	<ul style="list-style-type: none"> Impacts to freight rail operations resulting from construction activities along the three freight rail corridors adjacent to the Project, including multiple stoppages
	Commitments	<ul style="list-style-type: none"> Develop specifications for the contractor to follow in developing and implementing construction staging and sequencing plans
	Mitigation Measures	<p>Short-term:</p> <ul style="list-style-type: none"> Develop and implement freight rail operation coordination plans to facilitate coordination between the Project and the affected freight railroads during construction activities affecting freight rail operations <ul style="list-style-type: none"> Provide provisions in construction contract to identify how the contractor will interact with railroads Work with affected freight rail owners and operators to sequence construction to minimize effects on freight movements and to identify optimal periods for closing the rail service and reducing speeds Use flaggers to allow freight rail operations to continue
4.5 Bicycle and Pedestrian	Long-term Direct Impacts	<ul style="list-style-type: none"> Changes to pedestrian and bicycle facilities including intersection modifications, new station area platform access points, new at-grade sidewalk and trail crossings of LRT tracks, and modifications to trail widths Additions or modifications of facilities that will have a positive impact on pedestrian and bicycle travel, such as signalization of currently unsignalized roadway intersections, construction of new sidewalks or continuation of existing sidewalks around station areas, and geometry changes to roadways which may result in reduced pedestrian crossing distances Adverse impacts may include relocation of public trails, trail and station area conflicts, Kenilworth Trail widths, displacement of private trails, and a loss of queuing space for the at-grade LRT and freight crossing near Penn Station
	Long-term Indirect Impacts	<ul style="list-style-type: none"> Increase in pedestrian and bicycle activity in the station areas and along the regional trails
	Short-term Impacts	<ul style="list-style-type: none"> Changes to pedestrian and bicycle facilities, including intersection modifications, reconstruction of freight rail crossings, and trail and sidewalk detours Indirect impacts include reduced pedestrian and bicycle volumes on existing facilities
	Commitments	<p>Long-term:</p> <ul style="list-style-type: none"> Apply the following to changes to pedestrian and bicycle facilities based on the manuals, standards, and engineering best practices: <ul style="list-style-type: none"> Construct ADA-compliant curb ramps and detectable warnings to the latest standard at light rail stations, at-grade crossings of LRT tracks, as well as at roadway intersections that will be modified Update pedestrian change interval times at signalized intersections to allow additional crossing time; by the appropriate jurisdiction with the assistance from the Council Conform modifications to roadway geometry and local jurisdiction's changes to signalized intersections to the <i>Minnesota Manual of Uniform Traffic Control Devices</i>, 2015 Edition, as appropriate and in coordination with the applicable jurisdiction Provide stairs and ramps to make the pedestrian and bicycle connections possible at the Opus, West Lake, and Penn light rail stations in areas where grades inhibit pedestrian and bicycle access to stations Follow the recommendations from the AASHTO <i>Bike Design Guide</i>, where appropriate Provide elevators at the West Lake and Penn stations

Transportation Category		Summary of Impacts, Commitments, and Mitigation Measures
		<ul style="list-style-type: none"> Replace all existing public regional and local trails relocated by the Project with similar facilities that will provide the same connectivity; in some cases trail relocations include the addition of grade-separation where a trail crosses a roadway under existing conditions Include wayfinding, regulatory and warning signage, and markings of trail intersections to address conflicting movements at station areas <p>Short-term:</p> <ul style="list-style-type: none"> Provide a trail detour route or facility prior to construction activity at locations where existing trails and sidewalks may be obstructed by construction activity. Pedestrian and bicycle facilities will be maintained during construction in one of the following ways: <ul style="list-style-type: none"> Trail detour route. A signed route along other trails or roadways that provides a bicycle and pedestrian connection around an obstruction of the existing trail. Bicycle connections could be on another trail or on an existing street (with or without bike lanes). Pedestrian connections could be on another trail or on a sidewalk along an existing street. Trail detour facility. A temporary trail facility built to re-route bicycle and pedestrian traffic around an obstruction, usually located close to the existing trail. Sidewalk detour route. A signed route that provides pedestrian access to an area where access currently exists via another nearby sidewalk, frequently on the opposite side of a roadway. Where feasible, these temporary facilities will be as ADA compliant as the existing facilities. Sidewalk detour facility. A temporary paved facility built to re-route pedestrian traffic in areas where another nearby sidewalk does not exist. Where feasible, these temporary facilities will be as ADA compliant as the existing facilities. An exception to the above is an unforeseen safety issue during construction that would obstruct the trail or sidewalk and necessitate an immediate, short term closure. In this case, the trail or sidewalk may be closed and remain closed for five days or less without an available detour route or facility.
	Mitigation Measures	<p>Long-term:</p> <ul style="list-style-type: none"> Any measures to address the removal of the trail between Flying Cloud Drive and West 70th Street (e.g., replacement of the trail), will be determined by the property owner as part of the Project's property acquisition process <p>Short-term:</p> <ul style="list-style-type: none"> Develop and implement the Construction Mitigation Plan, Construction Communication Plan, and construction staging plan (see 4.1)
4.6 Safety and Security	Long-term Direct Impacts	<ul style="list-style-type: none"> Modifications to existing freight rail facilities, introduction of light rail stations and related facilities, new at-grade LRT crossings of roadways, potential changes to emergency vehicle access and response times, light rail service in the vicinity of freight rail service, and new light rail tunnels. No adverse impacts based on the incorporation of safety and security-related design and operational elements into the Project.
	Short-term Impacts	<ul style="list-style-type: none"> Potential for temporary delays in emergency response resulting from construction activities
	Commitments	<p>Long-term:</p> <ul style="list-style-type: none"> Conform to FTA's Rail Fixed Guideway Systems; State Safety Oversight Program for Safety and Security Guidance for Recipients with Major Capital Projects (Circular C 5800.1), covered under 49 CFR Part 633 – Project Management Oversight Coordinate with, as applicable, the State of Minnesota railroad and pipeline safety regulations that went into effect in July 2014 as part of MN Chapter 312 Implement the Project's Safety and Security Management Plan (SSMP) and the Metro <i>Light Rail Transit Design Criteria</i> to avoid potential safety issues at new light rail stations, including emergency equipment and appropriate lighting for public areas Install fencing near at-grade trail or sidewalk crossing, in station areas, and between light rail and freight rail alignment when adjacent to a trail or sidewalk, where possible Design at-grade LRT crossings of sidewalks and trails per the Metro Light Rail Transit Design Criteria to include flashing light signals with an audible warning to notify pedestrians of a train's arrival and detectable warnings and signs Design shared freight rail and light rail crossings to meet FRA requirements for at-grade crossings, including requirements for train horn quiet zones as described in the Train Horn Quiet Zone Final Rule (49 CFR Part 222), where applicable Maintain emergency vehicle access to areas within the vicinity of the Project

Transportation Category	Summary of Impacts, Commitments, and Mitigation Measures
	<ul style="list-style-type: none"> • Coordinate with affected emergency service providers including identification of alternative crossing routes • Implement safeguards from the Metro <i>Light Rail Transit Design Criteria</i> including emergency guardrails • Install intrusion detection for possible freight derailment where clearance between the centerline of the LRT tracks and the centerline of the freight tracks is less than 50 feet • Install corridor protection barriers between freight rail and light rail tracks where clearance between centerlines is less than 25 feet • Include safeguards in the catenary system for the Project to help minimize the possibility of sparking occurring in the overhead catenary wires • Regularly inspect pantographs for grooves along the pantograph's carbon strip, which could cause arcing • Where the light rail alignment will be adjacent to a freight rail alignment, the light rail alignment will be primarily on segregated right-of-way, in accordance with the National Electric Safety guidelines • Participate in the planning, performance, and evaluation of emergency simulations on the system in coordination with the LRT FLSSC • Implement Metro Light Rail Transit Design Criteria, as well as National Fire Protection Association 130: Standard for Fixed Guideway Transit and Passenger Rail Systems, and Circular C 5800.1, Safety and Security Guidance for Recipients with Major Capital Projects in the shallow tunnel in the Kenilworth Corridor and at Highway 62 to provide security and/or enhanced safety <p>Short-term:</p> <ul style="list-style-type: none"> • Coordinate with emergency service providers to provide schedule for construction activities and identify detour routes to minimizing delay for emergency response vehicles • Maintain required access during established periods or keep one lane of traffic open on main arterials as described in the Construction Mitigation Plan • Maintain federal Occupational Safety and Health Administration (OSHA) and Minnesota OSHA standards for safety of construction site personnel to minimize and/or avoid injury to construction workers • Contractors will prepare a project safety and health program along with a site-specific safety plan to ensure that, while on the work site and construction activities, contractor and subcontractor personnel comply with the specified safety practices, codes, and regulations as described in the Project's SSMP • Use construction safeguards, such as horizontal and vertical movement and settlement monitoring for both existing freight rail infrastructure and light rail tunnel in support of excavation • Collect and analyze monitoring data (by construction staff) and coordinate with freight railroad operations staff to verify that safe freight rail operations can be maintained through the construction area at all times • Develop and implement freight rail operation coordination plans to facilitate coordination between the Project and the affected freight railroads during construction activities affecting freight rail operations (see 4.4)
Mitigation Measures	<p>Short-term:</p> <ul style="list-style-type: none"> • Develop a Construction Mitigation Plan, Construction Communication Plan, and construction staging plan (see 4.1)

^a This table summarizes the anticipated impacts and mitigation measures for the Project as identified in the Final EIS. All data in the table are approximate. See the corresponding sections of Chapter 4 for a more detailed description of the anticipated impacts and mitigation measures. "Mitigation measures" are specific actions that will be incorporated into the project to address anticipated adverse impacts (see also 40 CFR 1508.20). "Commitments" are general actions that will be incorporated into the project that may not be tied to anticipated adverse impacts, such as the use of best management practices (BMPs) or public outreach strategies. If there are no mitigation measures identified for a specific type of impact area, it means that the avoidance measures identified for that transportation category will avoid any adverse impacts for that category, and, therefore, no mitigation measures are warranted.

^b See Section 4.4.4.2 for a description of unavailable and unobtainable information on the effect that the proposed Southerly Connection could have on freight rail operations.

Note: Data are approximate. ADA = Americans with Disabilities Act; AASHTO = American Association of State Highway and Transportation Officials; BMP = best management practice; FLSSC = Fire Life Safety and Security Committee; FRA = Federal Railroad Administration; HCRRA = Hennepin County Regional Railroad Authority; LOS = level of service; CFR = Code of Federal Regulations; LRT = light rail transit; LRV = light rail vehicle; MnDOT = Minnesota Department of Transportation; MN&S = Minneapolis, Northfield, and Southern Railway; OSHA = Occupational Safety and Health Administration; SSMP = Safety and Security Management Plan; TPSS = traction power substation; TC&W = Twin Cities and Western Railway Company, Uniform Relocation Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act.

Source: Council, 2015.

4.1 Public Transportation

This section describes long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on transit service (see Section 3.17 for cumulative impacts). This section provides an overview of the regulatory context and methodology used for the analysis; an assessment of the existing built environment; a description of the anticipated impacts related to transit services; and a description of mitigation measures to implement with the Project.

4.1.1 Regulatory Context and Methodology

The public transportation⁷ analysis study area consists of the Southwest Light Rail Transit (LRT) Corridor where public transportation service changes will occur as a result of the Project (see Exhibit 4.1-1). This analysis addresses public transportation service provided by two different transit agencies: Metro Transit and SouthWest Transit. Metro Transit is the primary fixed-route transit agency serving the Twin Cities metropolitan area. SouthWest Transit provides transit service to the southwest metropolitan area, including the cities of Carver, Chaska, Chanhassen, and Eden Prairie, with express service to downtown Minneapolis and the University of Minnesota.

The analysis compares transit service, transit ridership, access to transit, and transit travel times for the existing service (2010⁸), the No Build Alternative (2040), and the Project (2040). Exhibit 4.1-1 illustrates the transportation analysis corridor and study area. The Council's regional travel demand model served as the primary data source for this analysis. Refer to the *Draft Travel Demand Methodology & Forecast, Revision 3, Southwest LRT Technical Report (Technical Report)* listed in Appendix C for a more detailed description of the travel demand forecasting methodology.

The regional travel demand model forecasts travel on the transit and highway systems within the Twin Cities metropolitan area. The transit system includes categorization of existing and planned rail and bus lines, as well as details on service frequency, routing, travel time, and fare for each rail and bus line. Section 4.2 documents the model's highway traffic forecasts.

The regional travel demand model provides detailed information on transit ridership demand, estimates of passenger boardings, and other critical and relevant information used to evaluate the performance of the Project in relation to the No Build Alternative. See the *Technical Report* listed in Appendix C for a detailed description of the forecasting methodology.

4.1.2 Affected Environment

This section describes the existing and planned transit system in the public transportation study area.

4.1.2.1 Existing Transit System

Existing transit service within the study area consists of express and local bus service. Transit service ridership within the study area is generally high, with most routes operating at or above optimal capacities with steady ridership volumes. Within the transportation analysis corridor area, there are 28 bus routes providing service to hundreds of bus stops, park-and-ride lots, and transit centers. Exhibit 4.1-2 illustrates existing transit service in the study area.⁹

The majority of weekday transit service in the transit study area is express, with some local and suburban services. Two of the routes (Routes 12 and 17; see Exhibit 4.1-2) within the corridor are considered "primary corridor routes" which run parallel to significant segments of LRT in the corridor and provide all-day, local service seven days a week. "Connecting corridor routes" are those routes within the corridor that provide connections to the primary corridor routes or service (Routes 5, 19, and 22, which connect to the Project at Royalston Station). "Express corridor routes" provide weekday peak-period express service between the

⁷ Public transportation modes considered in this analysis include passenger rail, fixed catenary system (LRT), fixed route bus service, and bus rapid transit

⁸ The Council used 2010 data as the base year for the travel demand model.

⁹ Many of the bus routes in Minneapolis unaffected by the Project are not shown on Exhibit 4.1-2.

EXHIBIT 4.1-1

Transportation Analysis Corridor

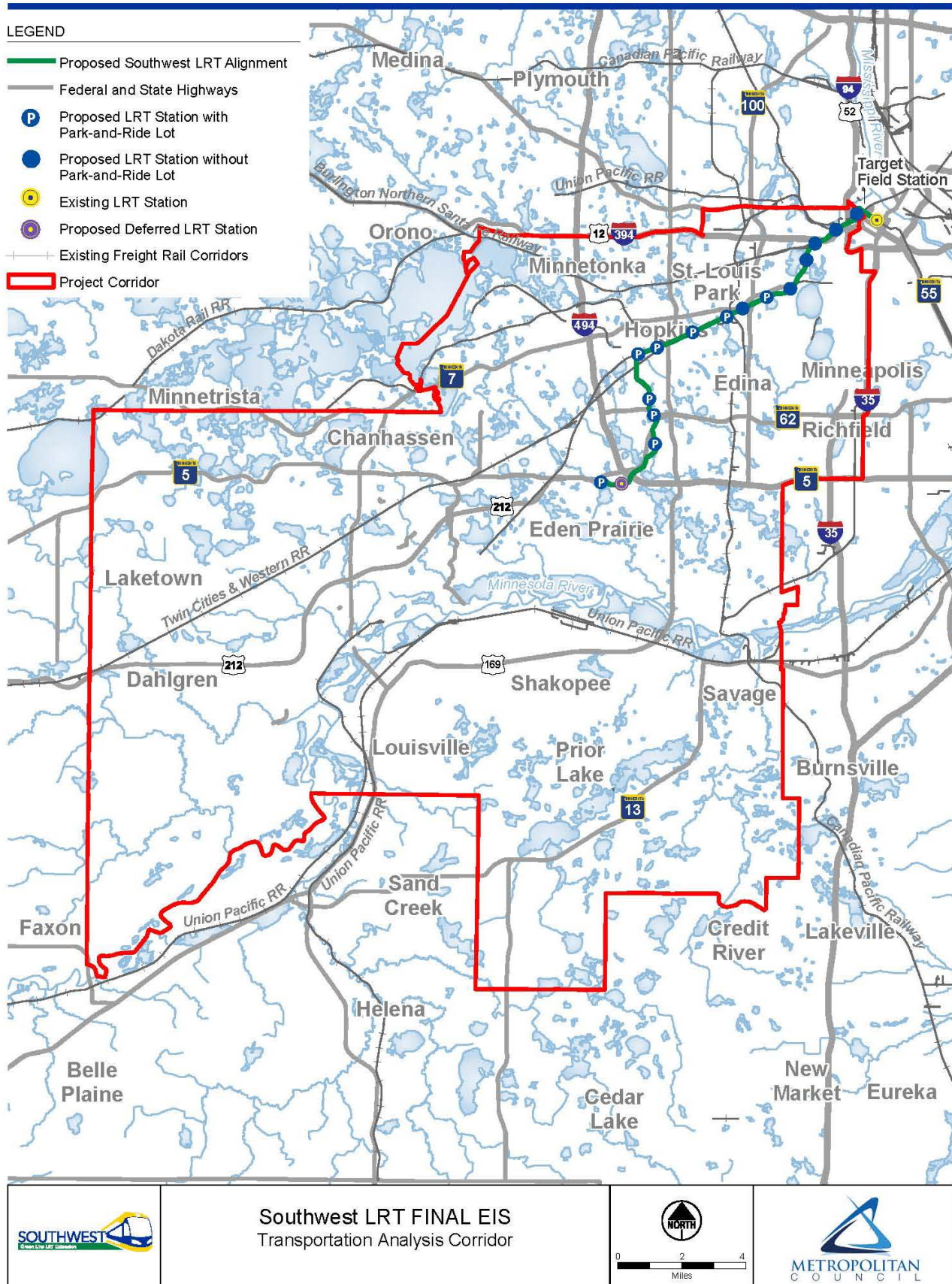
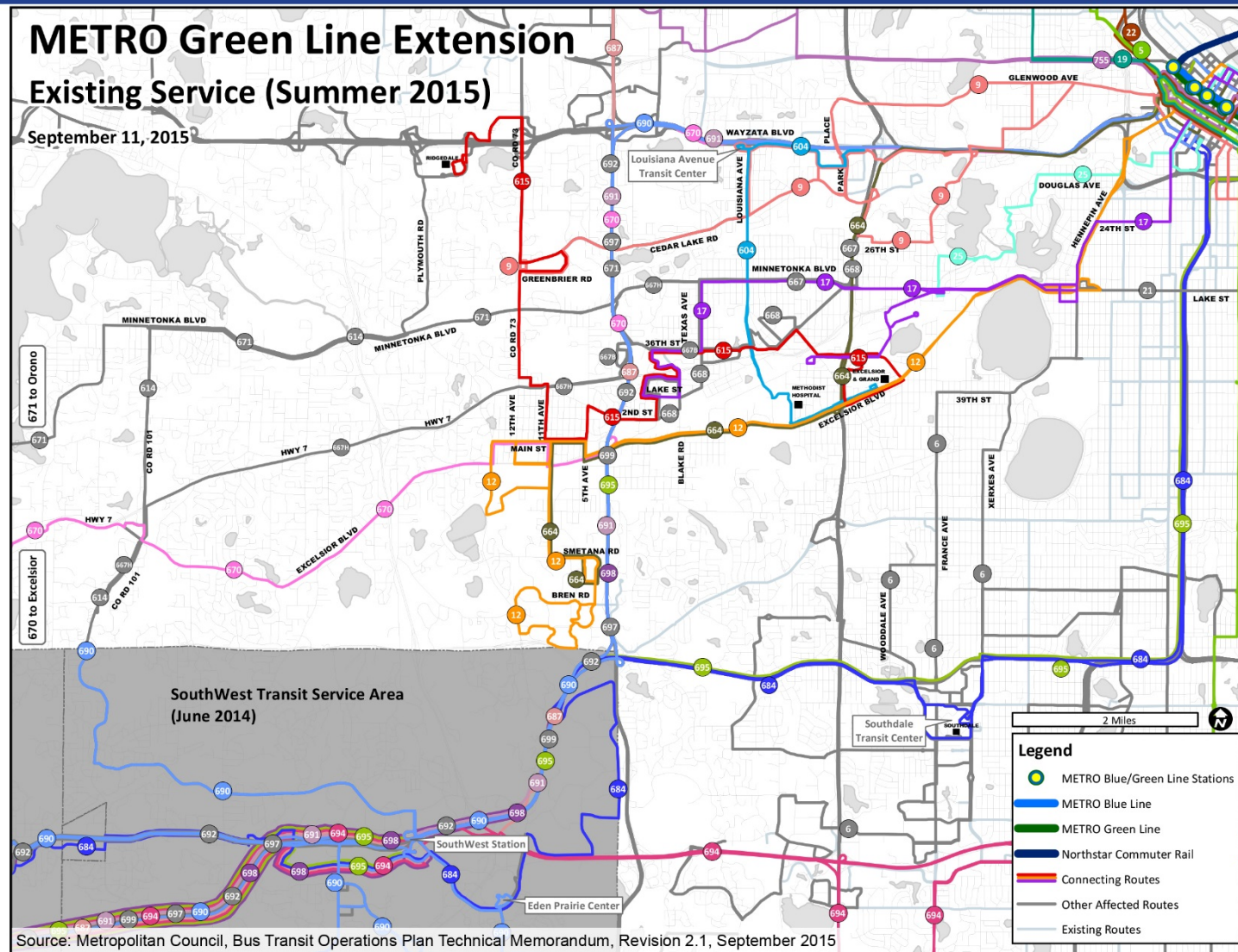


EXHIBIT 4.1-2

Southwest Study Area Existing Service



Southwest LRT FINAL EIS

Southwest Study Area Existing Transit Service
Southwest LRT Project



corridor and downtown Minneapolis (Routes 664, 667, 668, 670, and 671). “Other affected routes” are routes not in the immediate corridor but are in the study area and are affected (Routes 6, 21, and 614). The “Other operators” section outlines the service provided by SouthWest Transit in the Eden Prairie portion of the corridor.¹⁰

The type of service provided is reflective of the trip-making behaviors of transit users in the study area, predominantly commuters making either home-based work or school trips. On weekends, transit service is available on a limited basis in the suburban portions of the study area, serving home-based work and shopping trips. Most of the express routes operate during the weekday morning and afternoon peak periods, although some off-peak early morning, mid-day, and evening express service is provided at reduced frequencies. While transit service headways¹¹ vary, most current express routes operate at approximately 30-minute headways (or less) during peak periods. Off-peak service is provided by the local and suburban routes, running at headways typically between 30 and 60 minutes apart. Directionally, most of the express routes provide inbound service to downtown Minneapolis during the morning peak period, with outbound service provided in the afternoon peak period. SouthWest Transit provides one reverse-commute bus route during weekday peak periods (Route 684). Metro Transit provides two reverse-commute bus routes (Routes 12 and 17).

Downtown Minneapolis is both a high-demand and a well-served transit market, with service offered by both transit providers. More than 100 bus routes and two light rail lines serve hundreds of downtown bus stops, transit centers, and stations. On several downtown streets, more than 20 bus routes provide a mixture of local or express services. Most of Metro Transit’s high-frequency bus routes serve the downtown core, and future service planning indicates increasing transit services in downtown Minneapolis is a priority. Major transit thoroughfares include Nicollet Mall, Hennepin Avenue, Marquette Avenue, 2nd Avenue South, 4th Street, 5th Street, 6th Street, 7th Street, 8th Street, 11th Street, and 12th Street. In addition, improvements around the Twin Cities metropolitan area have included over 300 miles of bus-only shoulders, approximately 10 miles of bus-only lanes, ramp meter bypass lanes, high-occupancy vehicle (HOV) lanes, high-occupancy toll (HOT) lanes, and a small network of exclusive transitways.

4.1.2.2 Long-Range Planning

The Council adopted its current long-range plan on January 14, 2015. This plan, called the 2040 Transportation Policy Plan (2040 TPP), documents the transportation goals of the region (Council, 2015b).

According to the 2040 TPP, local bus route coverage in the region (including the corridor) will expand, including modifications to some routes and the addition of new routes by 2040. Any expansion of transit service will help meet the demands of a growing region, which is forecast to increase by 824,000 residents by 2040. The 2040 TPP identifies the need for expanded passenger facilities and transit infrastructure as a catalyst for attracting new riders. It identifies the potential for expansion of several existing and a number of new transit facilities, including park-and-ride lots, transit centers, and transit advantages. The 2040 TPP includes the construction of the Southwest LRT Project (referred to as METRO Green Line Extension) in both its current (fiscally constrained) revenue and expanded revenue scenarios. Exhibit 4.1-3 illustrates the major transit investments that will be in place as part of the 2040 TPP.

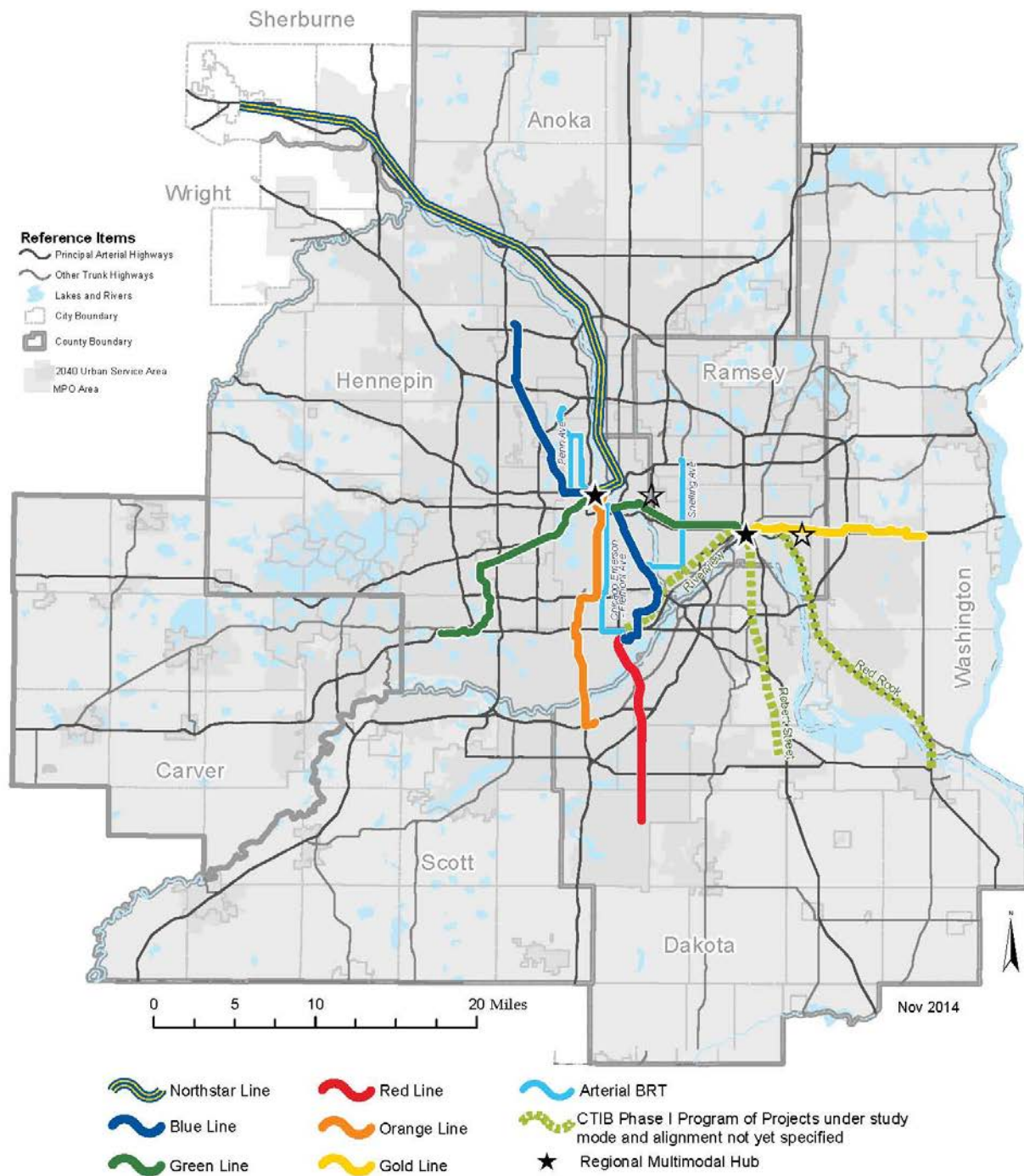
4.1.2.3 No Build Alternative

The following is a description of the changes in transit service that would occur under the 2040 No Build Alternative. Annual transit vehicle hours and miles would increase by nearly 1 percent per year between the existing level of service and the 2040 No Build Alternative. While many routes in the corridor would undergo no change in service frequency, Routes 12, 17, 604, and 614 would see major changes. For Routes 12 and 17, service frequency would increase and service hours would be extended. For Route 604 weekend service would be added. For Route 614, Sunday service would be added. For both routes, service frequency would increase, and service hours would be extended. Additionally, one new crosstown route (Route 620) to

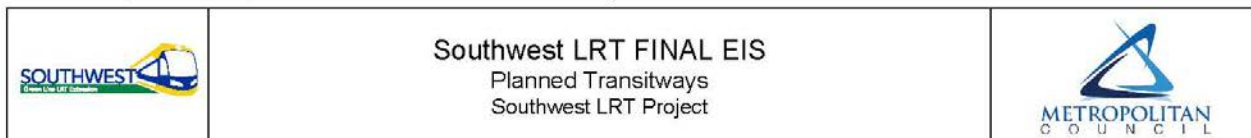
¹⁰ Denoted in gray shading on the exhibits.

¹¹ Headway is the frequency of service.

Major Transit Investments Identified in the TPP



Source: Metropolitan Council, 2040 TRANSPORTATION POLICY PLAN | Version 1.00



connect Hopkins and Eden Prairie, one new circulating loop route (Route 26) in North Minneapolis, and three new arterial bus rapid transit (BRT) lines would be added to existing service. SouthWest Transit (Routes 684 – 699) would add service on seven routes. See Exhibit 4.1-4.

Exhibit 4.1-4 illustrates the No Build Alternative bus operation plan. The introduction of arterial bus rapid transit on the C line and on Fremont and Emerson Avenues would decrease the frequency of service on Route 5 and 19 to every 30 minutes.

4.1.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts on transit from the Project. The Project will introduce new light rail service in the public transportation study area, which will increase the overall transit service demand in the study area. Bus service will be modified as appropriate to meet demand and provide connections to the proposed Southwest LRT stations. Exhibit 4.1-5 illustrates the Project bus operation plan (Council, 2014). In particular, this section describes how the Project will change transit travel times and transit ridership, including forecast ridership on the proposed METRO Green Line Extension. Additional information on how the Project will affect transit service and demand can be found in the *Draft Travel Demand Methodology & Forecast, Revision 3, Southwest LRT Technical Report* (see Appendix C for instructions on how to access the report).

4.1.3.1 Long-term Direct Impacts on Transit

Transit Travel Time

Table 4.1-1 compares average weekday (2040 No Build Alternative and Project) in-vehicle travel time for transit during the PM peak-hour travel times, to and from select locations, where at least one trip end is in the public transportation study area. The PM peak hour is assessed because it is generally the worst case from a congestion standpoint. The select trips are grouped into *regular commute trips* (i.e., trips taken outbound from the central business district in the evening) and *reverse commute trips* (i.e., trips taken inbound to the central business district in the evening). As shown, with the exception of the commute trips from Eden Prairie to downtown Minneapolis, travel times under the Project will generally improve over existing conditions and the No Build Alternative.

TABLE 4.1-1

Average Weekday Total Transit Travel Times (minutes) during the PM Peak Period – No Build Alternative and Project (2040)^a

Origin/Destination Pair	No Build (2040)	Project (2040)
Commute Trip – from Downtown Minneapolis (408)^b to:		
West Lake Calhoun (332)	36.62	36.62
To Downtown Hopkins (567)	59.37	54.52
To Eden Prairie (551) ^c	58.83	58.83
Reverse commute trip - From Opus (594) to:		
Downtown St Paul (815)	108.85	97.25
Downtown Minneapolis (408)	76.75	65.15
North Minneapolis (433)	97.29	85.69
West Lake Calhoun (332)	74.66	69.10

^a Total time is the sum of in-vehicle time and other time related to completing the trip, including walking and waiting time.

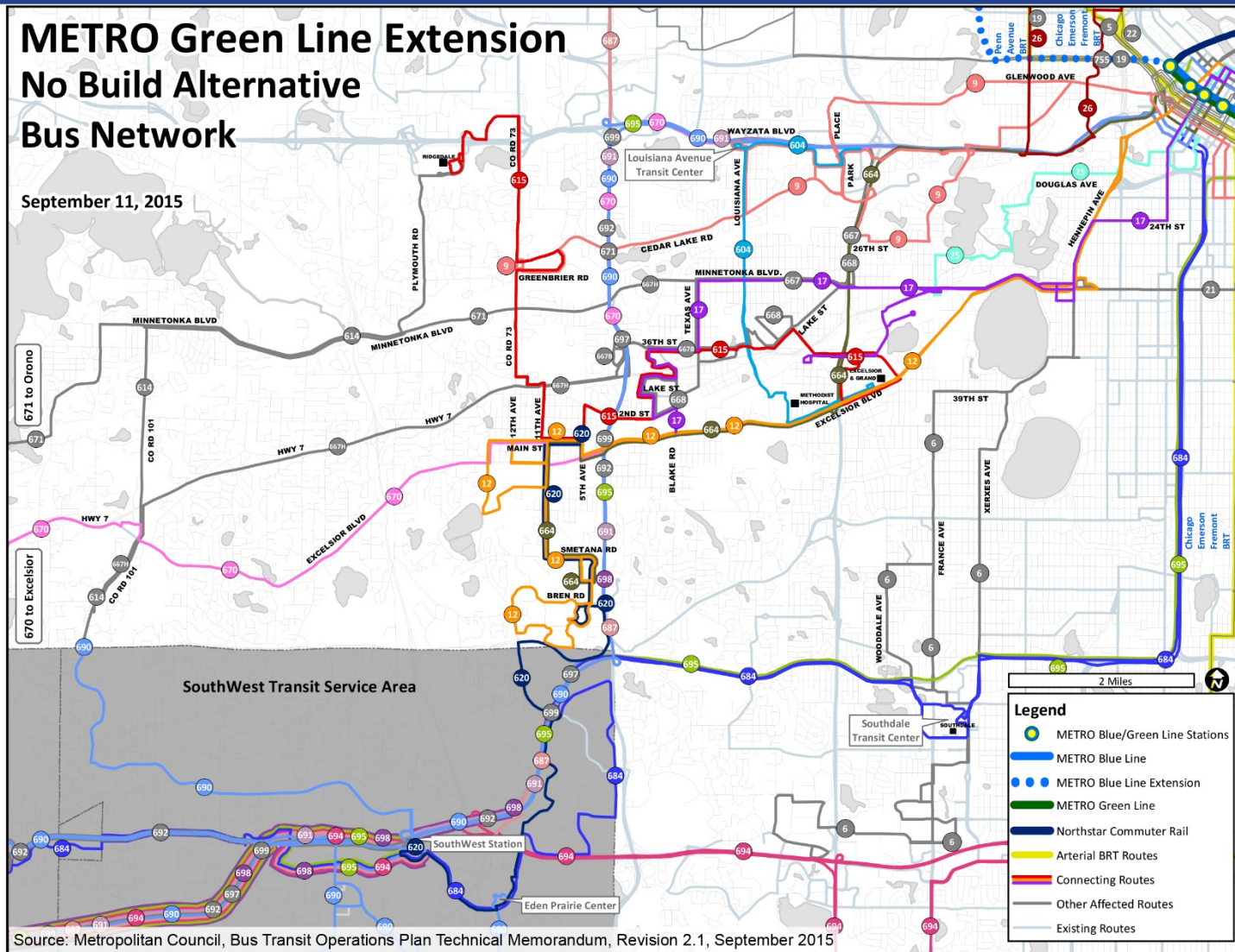
^b (nnn) = transportation analysis zone number.

^c Based on presence of the Eden Prairie Town Center Station in 2040, which is deferred until after 2020. If the Eden Prairie Town Center Station is not in place by 2040, this travel time would be reduced by 37 seconds, due to the elimination of the acceleration, deceleration, and dwell times at the deferred station location.

Source: Council. 2015a. Draft Travel Demand Methodology & Forecast, Revision 3, Southwest LRT Technical Report listed in Appendix C.

EXHIBIT 4.1-4

No Build Alternative Bus Operations Plan

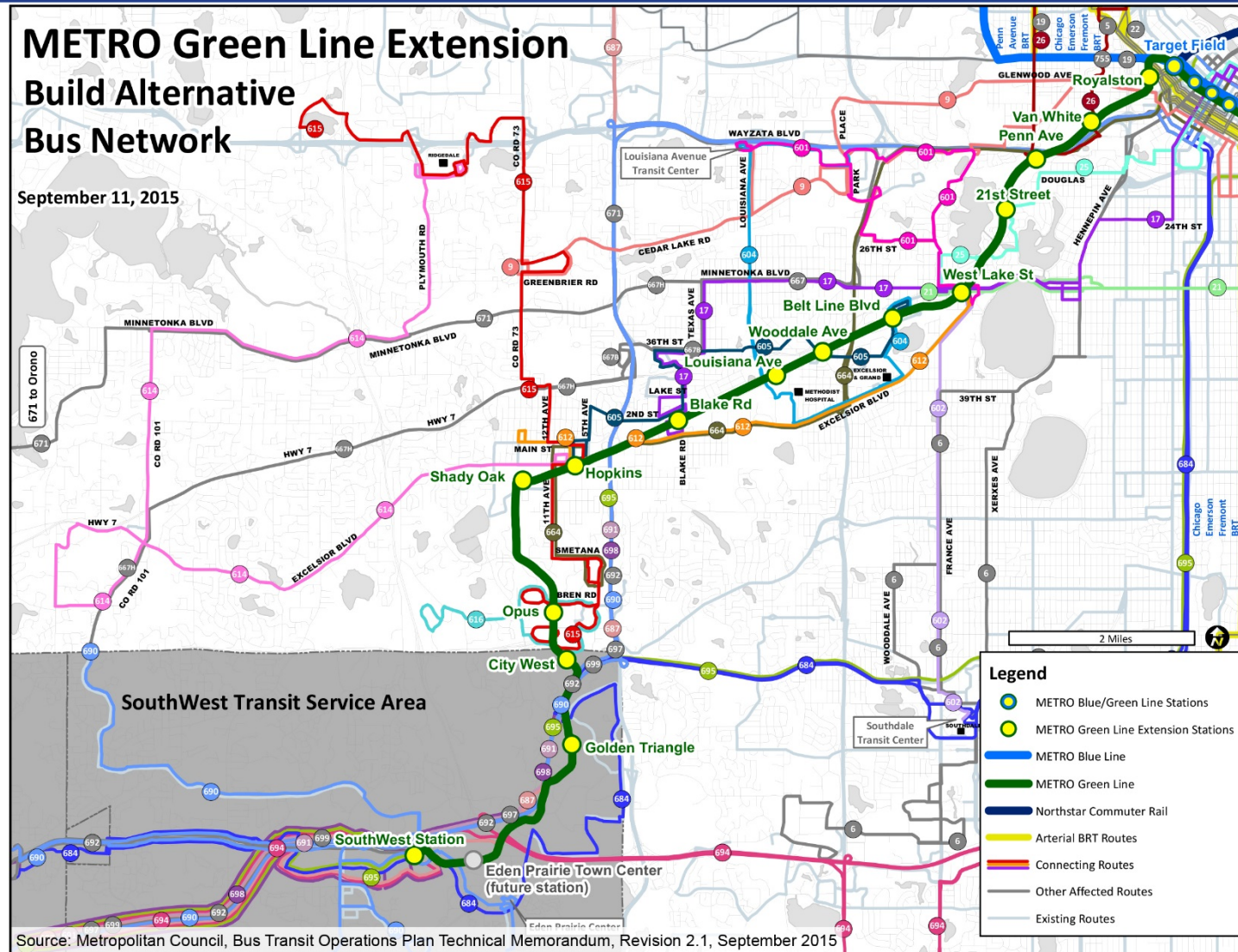


Southwest LRT FINAL EIS No Build Alternative Bus Operations Plan Southwest LRT Project



EXHIBIT 4.1-5

Corridor Bus Routes Under the Project (average weekday, 2040)



Southwest LRT FINAL EIS

Corridor Bus Routes Under the Project (average weekday, 2040)

Southwest LRT Project



Transit Ridership

Table 4.1-2 shows the average number of weekday transit trips under existing conditions, the No Build Alternative and the Project. Trips quantified in Table 4.1-2 are transit trips that will occur in the study area and systemwide. As shown, a 14 percent increase (13,000 new trips) is forecast in weekday transit trips within the study area with the Project, compared to the No Build Alternative.

TABLE 4.1-2

Average Weekday Total Systemwide and Project Corridor Transit Trips, Year 2040

	Existing (2010)	No Build (2040)	Project (2040)
Total Corridor Transit Trips ^a (originating rides)	56,914	94,339	107,354
Change from Existing	NA	37,425	50,440
% Change from Existing	NA	66%	89%
Change from No Build Alternative	NA	NA	13,015
% Change from No Build Alternative	NA	NA	14%
Total Systemwide Transit Trips	204,483	330,899	344,139 ^b

^a Transit trips are one-way linked trips from an origin (e.g., home) to a destination (e.g., place of work or school), independent of whether the trip requires a transfer or not. A person traveling from home, to work, and back, counts as two trips. Total corridor transit trips include all light rail and bus trips produced in or attracted to the SW LRT Corridor.

^b As described in Section 2.1.1, the Eden Prairie Town Center Station and associated roadway improvements are deferred and are not expected to be in place when the Project opens in 2020. If the station and associated roadway improvements are not in place by 2040, there would be a reduction of approximately 465 transit trips (corridor and systemwide).

N/A = not applicable

Table 4.1-3 shows average weekday commuter rail and light rail boardings under the No Build Alternative and the Project. As shown in Table 4.1-3, average weekly ridership and PM peak-hour loadings are forecast to increase on in-place commuter rail and light rail lines, once the Project is implemented. A 39 percent increase is forecast for average weekday boardings (nearly 34,000 additional boardings), and an 8 percent increase is forecast for PM peak-hour boardings in the peak direction (over 200 additional boardings).

Table 4.1-4 outlines the mode share for the Project's work and non-work transit trips that have a trip destination in downtown Minneapolis. The table compares the Project (2040) to the existing conditions (2010) and the No Build Alternative (2040).

As shown, for home-based work trips, 31,287 transit trips are forecast to occur on the average weekday, representing 48 percent of all trips to downtown Minneapolis. This will be a four percentage-point increase in home-based, downtown-destined trips, compared to the 2040 No Build Alternative. There is also an anticipated increase in the number of non-work trips forecast to occur with Project implementation, with 2 percent more non-work trips forecast with Project implementation than the number that would occur under the 2040 No Build Alternative. The overall number of trips destined for downtown with Project implementation is 39,725, which is 3,541 trips more than those forecast for the 2040 No Build Alternative.

Table 4.1-5 summarizes individual station use, trip levels, and mode of access to the light rail stations. The most frequently used station will be West Lake Station, which will account for 13 percent of Project boardings.

TABLE 4.1-3

Average Weekday Light Rail and Commuter Rail Boardings, Year 2040

	No Build (2040)	Project (2040)
Average Weekday Boardings ^a		
Green Line ^{b c}	33,902	66,581
Blue Line	52,356	53,280
<i>Total Light Rail System</i>	86,258	119,861
Northstar ^d	145	159
<i>Total Rail System</i>	86,403	120,020
PM Peak-Hour, Peak-Direction Peak Load Point ^e		
Green Line ^{b c}	1,497	1,649
Blue Line	1,358	1,435
<i>Total Light Rail System</i>	2,855	3,084
Northstar ^d	65	71
<i>Total Rail System</i>	2,920	3,155

^a Boardings are rides per line. Linked trips are counted twice if the passenger transfers from one LRT line to another LRT line or a bus line.

^b Southwest LRT will be an extension of the Green Line (segment between St. Paul and Minneapolis opening June 2014). For the Project, 36,162 of these boardings will be from new riders at the Project stations

^c As described in Section 2.1.1, the Eden Prairie Town Center Station and associated roadway improvements are deferred and are not expected to be in place when the Project opens in 2020. If the station and associated roadway improvements are not in place by 2040, there would be a reduction of approximately 713 transit boardings.

^d Northstar Rail has low ridership in this table, because the model does not cover the entire length of the rail line.

^e The peak load point is the location of maximum utilization of a transit line, or the station-to-station segment with the highest passenger loads.

Source: Council. 2015a. Draft Travel Demand Methodology & Forecast, Revision 3, Southwest LRT Technical Report listed in Appendix C.

TABLE 4.1-4

Average Weekday Work and Nonwork Corridor Transit Trips and Transit Mode Share to Downtown, Year 2040

	Existing (2010)	No Build (2040)	Project (2040)
Home-Based Work ^a			
Transit	15,349	28,849	31,287
Transit Mode Share %	32%	44%	48%
Nonwork ^c			
Transit	4,703	7,335	8,438
Transit Mode Share %	8%	9%	11%
Total			
Transit	20,052	36,184	39,725 ^b
Transit Mode Share %	18%	25%	27%

^a Home-based work trips are defined as trips taken directly between one's home and one's place of work

^b As described in Section 2.1.1, the Eden Prairie Town Center Station and associated roadway improvements are deferred and are not expected to be in place when the Project opens in 2020. If the station and associated roadway improvements are not in place by 2040, there would be a reduction of approximately 260, 142, and 713 home-based, non-work, and total transit trips, respectively. The transit mode shares in this table would not change appreciably.

^c Nonwork trips are defined as all trips that are not home-based work trips.

TABLE 4.1-5

Average Weekday Station Usage (Ons and Offs) by Mode of Access, Year 2040

Station	Station Ons (Offs)	% of Total Ons (Offs)	% by Mode of Access	
SouthWest Station	3,104 (1579)	10% (8%)	33% (48%)	Walk
			35% (52%)	Transfer
			33% (0%)	Park-and-Ride
Eden Prairie Town Center Station ^a	1,502 (916)	5% (5%)	89% (79%)	Walk
			11% (21%)	Transfer
			0% (0%)	Park-and-Ride
Golden Triangle Station	1,263 (1844)	4% (10%)	56% (69%)	Walk
			8% (31%)	Transfer
			36% (0%)	Park-and-Ride
City West Station	790 (565)	3% (3%)	52% (100%)	Walk
			0% (0%)	Transfer
			48% (0%)	Park-and-Ride
Opus Station	1,032 (1717)	3% (9%)	83% (100%)	Walk
			1% (0%)	Transfer
			16% (0%)	Park-and-Ride
Shady Oak Station	2,087 (485)	7% (3%)	25% (100%)	Walk
			0% (0%)	Transfer
			75% (0%)	Park-and-Ride
Downtown Hopkins Station	2,890 (1227)	9% (7%)	6% (31%)	Walk
			79% (69%)	Transfer
			15% (0%)	Park-and-Ride
Blake Station	1,316 (576)	4% (3%)	71% (95%)	Walk
			14% (5%)	Transfer
			16% (0%)	Park-and-Ride
Louisiana Station	2,232 (1155)	7% (6%)	56% (88%)	Walk
			8% (12%)	Transfer
			36% (0%)	Park-and-Ride
Wooddale Station	1,817 (546)	6% (3%)	100% (100%)	Walk
			0% (0%)	Transfer
			0% (0%)	Park-and-Ride
Beltline Station	2,653 (1333)	8% (7%)	77% (100%)	Walk
			0% (0%)	Transfer
			23% (0%)	Park-and-Ride
West Lake Station	4,028 (1453)	13% (8%)	36% (30%)	Walk
			64% (70%)	Transfer
			0% (0%)	Park-and-Ride
21st Street Station	1,641 (361)	5% (2%)	100% (100%)	Walk
			0% (0%)	Transfer
			0% (0%)	Park-and-Ride

Station	Station Ons (Offs)	% of Total Ons (Offs)	% by Mode of Access	
Penn Station	1,024 (263)	3% (1%)	100% (100%)	Walk
			0% (0%)	Transfer
			0% (0%)	Park-and-Ride
Van White Station	332 (246)	1% (1%)	100% (100%)	Walk
			0% (0%)	Transfer
			0% (0%)	Park-and-Ride
Royalston Station	1,430 (1819)	5% (10%)	6% (17%)	Walk
			94% (83%)	Transfer
			0% (0%)	Park-and-Ride
Interchange Station	2,308 (2670)	7% (14%)	53% (67%)	Walk
			27% (33%)	Transfer
			20% (0%)	Park-and-Ride
	Total Station Ons (Offs) by Mode of Access		% of Total Ons (Offs)	
Walk	16,830 (12,759)		54% (68%)	
Transfer	8,561 (5,996)		27% (32%)	
Park-and-Ride	6,058 (0)		19% (0%)	
Total Station Ons/Offs	31,449 (18,755)		100% (100%)	

^a Based on presence of the Eden Prairie Town Center Station in 2040, which is deferred until after 2020. If the Eden Prairie Town Center Station is not in place by 2040, ridership activity at that location would be eliminated and ridership levels at other stations would be slightly reduced.

4.1.3.2 Long-term Indirect Impacts on Transit

The areas of indirect impact on transit include ridership forecasts and operational changes. Ridership forecasts for the Project show an increase in new transit trips, which will be associated with a decrease in auto trips resulting from people switching from auto to transit for the first time. While the intent of implementing light rail is to attract new riders, this would nevertheless be an indirect impact because people may choose to use the new light rail service once it is constructed based on its benefits in relation to their transportation needs.

Implementation of the Project will also result in a redistribution of ridership and operational changes to the existing local bus system. Trips via bicycle and pedestrian modes will increase in direct relation to the increase in transit trips because a certain number of transit riders will access the transit system by foot and/or bicycle. It is likely that demand for pedestrian and bicycle access to light rail stations will increase as an indirect result of the Project.

Another potential indirect effect of the Project would be the potential increases in development density or redevelopment in areas surrounding proposed light rail stations (see Section 3.1 for additional information on land uses within future station areas) could result in an increase in number of people that use transit. This would have a positive effect on the Project and other elements of the transit system.

4.1.3.3 Short-term Impacts on Transit

Construction of the Project may result in intermittent impacts to bus operations on routes within the construction area. Impacts may include temporary stop relocations or closures, route detours, or suspensions of service on segments of routes operating on streets where light rail is being constructed. As engineering advances, transit routes will be reevaluated and transitway construction will be planned to minimize disruption to transit service.

4.1.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term transit impacts. For each mitigation measure or set of associated mitigation measures, this

section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Section 4.1.3.3 for additional information on the identified transit impacts and minimization measures).

4.1.4.1 Mitigation Measures for Long-term Impacts

No mitigation measures are warranted for long-term impacts to transit because there will be no long-term adverse impacts to transit service due to the Project's expansion of transit service. However, the Project will affect fixed-route bus service. The Council will follow federal and local procedures for route modifications or suspension of transit service, which will include a Title VI analysis to determine how service changes affect low-income and minority communities. This will include a community outreach process for designing route changes, a public hearing for the proposed service changes, and ongoing outreach efforts to communicate service changes prior to implementation.

4.1.4.2 Mitigation Measures for Short-term Impacts

Specific mitigation measures for short-term impacts to bus service will be identified in the Construction Mitigation Plan, which includes a Construction Communications Plan and construction staging plan (staging plan) for implementation by the Council prior to and during construction. The purpose of the Construction Communication Plan is to prepare Metro Transit and SouthWest Transit riders, project-area residents, businesses, and commuters for what to expect during construction, listen to their concerns, and develop plans to minimize disruptive effects. Strategies may include:

- Issue construction updates and post them on the Project website
- Provide advance notice of roadway closures, driveway closures, and utility shutoffs
- Conduct public meetings
- Establish a 24-hour construction hotline
- Prepare materials with information about construction
- Address property access issues
- Assign staff to serve as liaisons between the public and contractors during construction
- Post information at bus stops indicating temporary stop closures and/or detour details
- Publish information in advance of bus detours on Metro Transit's website and in its on-board information brochure

In addition, the Council will develop and implement a construction staging plan (staging plan), which will be reviewed with the appropriate jurisdictions and railroads, and the contractor will be required to secure the necessary permits and follow the staging plan, unless otherwise approved. Components of a staging plan include traffic management plans and a detailed construction timeline.

4.2 Roadways and Traffic

This section describes the long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on the roadway system and traffic operations (see Section 3.17 for cumulative impacts).¹² This section includes an overview of the regulatory context and methodology used for traffic impacts analysis; an assessment of the existing built environment as it relates to roadways and traffic; a description of the anticipated impacts to roadways and traffic; and a description of mitigation measures to implement with the Project.

¹² The analysis of roadway system and traffic operations applies to general vehicle traffic, which includes freight transportation via trucking. Refer to Section 4.4, Freight, for a discussion on freight rail.

4.2.1 Methodology

Refer to the *PEC-West Traffic Memorandum* (2015) and *PEC-East Traffic Memorandum* (2015) for additional detail on the traffic analysis, including a more detailed description of the roadways and traffic methodology (see Appendix C).

4.2.1.1 Data Collection

Data were collected to provide base information for existing conditions including: 13-hour weekday multimodal traffic counts at intersections; freight rail train lengths and crossing times; geometric and traffic operations data; timing and coordination plans for traffic signals; existing gate timings along the METRO Blue Line (Hiawatha LRT); and existing bus routes, stops, and passenger loading and unloading.

4.2.1.2 Travel Demand Forecasting Methodology

The Council's regional travel demand model was used to forecast 2040 systemwide average weekday vehicle trips, VMT, congested lane miles, VHT, vehicle hours of delay (VHD), and person trips (see Section 4.1.1 for a description of the regional travel demand model). Preliminary 2040 socioeconomic data prepared by local communities and consistent with the Metropolitan Council's *Thrive MSP 2040*¹³ were used as input to the Metropolitan Council's regional travel demand model. The outputs were compared to existing and historic traffic counts, as well as to the previously-prepared 2030 forecast roadway volumes in the 2030 comprehensive plans of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, Minneapolis, and Hennepin County.

For the Cities of Eden Prairie, Minnetonka, Hopkins, and St. Louis Park, information from the regional travel demand model was combined with expected changes in land use and density and anticipated developments to derive growth rates (ranging from 0.5 to 4.0 percent) used to calculate 2040 peak hour turning movement forecasts at each intersection for the No Build Alternative. In Minneapolis, which is a fully built-out community where lower growth is expected, annual growth rates of 0.3 to 0.4 percent per year were utilized based on typical practices by the City of Minneapolis and Hennepin County.

Vehicle trip generation rates for planned park-and-ride lots were based on data collected from other park-and-ride lots in the region. These trip generation rates were applied to the number of spaces planned for each proposed park-and-ride facility. The traffic forecast to be generated by the park-and-ride lots was added to the No Build Alternative forecasts to produce the Project forecasts, without any reduction in forecast traffic volumes due to light rail transit ridership, based on the results of sensitivity testing within the regional travel demand model. This method produced relatively conservative projections on the roadway network that will be affected by park-and-ride trips.

4.2.1.3 Roadways and Traffic Analysis Methodology

Traffic operations analyses were completed for key intersections within the study area for existing conditions, the No Build Alternative (2040) and the Project in 2040. Methodologies documented in the *Highway Capacity Manual* (HCM) (Transportation Research Board, 2010) were followed to complete traffic operations analyses. Synchro/Sim Traffic and VISSIM software packages¹⁴ were used to develop the traffic analysis models. The inputs into the software included lane geometrics, traffic volumes, pedestrian volumes, light rail stations, freight rail and light rail alignments, freight rail and light rail vehicle volumes, intersection and at-grade crossing control devices, and signal phasing and timing characteristics.

The Project has the potential to improve traffic conditions and roadway system performance by upgrading intersections with added turn lanes and the addition or modification of traffic signals. In addition, by prompting a shift in the mode of travel from private automobiles to public transit, the Project has the potential to reduce traffic congestion. While these changes would represent relatively small changes on a regional level, they would represent appreciable improvements over the No Build Alternative within the corridor. The potential regional traffic benefits of the Project were evaluated based on the change in daily

¹³ See <http://www.metrocouncil.org/Planning/Projects/Thrive-2040/Thrive-MSP-2040-Plan.aspx?source=child>.

¹⁴ Synchro, Sim Traffic and VISSIM are traffic simulation software packages used to analyze existing and simulate future traffic conditions using HCM methodologies.

vehicle trips, vehicle miles traveled (VMT), roadway operating speeds, intersection level of service LOS, and representative travel times. These areas are discussed in the *Traffic Memorandum* (2015), with key findings summarized in the following sections.

Traffic operations for this analysis are characterized by intersection LOS, which is based on delay and available capacity. LOS for an intersection is classified into ratings that range from “A” to “F,” where “A” represents the least congested operations and “F” represents the most congested operations. Intersections that operate between LOS A and LOS D meet applicable state and local standards for performance, while intersections that operate at LOS E or LOS F designate lower levels for performance. In addition, vehicular queuing (i.e., cars lined up waiting at an intersection) at intersections was evaluated. A queuing issue was identified when the forecasted queue length exceeded 500 feet at a stop-controlled intersection or when a queue length exceeds the length of a turn lane at a signal-controlled intersection. In areas where the light rail alignment will be located adjacent to an existing freight rail alignment, existing at-grade roadway/freight crossings will also include at-grade light rail crossings (see Section 4.6, Table 4.6-2 for a list of existing at-grade freight rail crossings). For these locations, the evaluation of traffic operations for existing conditions (2013), the No Build Alternative (2040), and the Project (2040) includes an analysis of LOS both without and with a freight train crossing event. In general, freight train crossing events are not expected to occur in the peak hours under typical conditions, and therefore are not considered in this traffic impacts analysis; however, they were evaluated to present a sensitivity analysis for impacts to roadways and traffic if they were to occur during peak hours. Refer to the *PEC-West Traffic Memorandum* (2015) and *PEC-East Traffic Memorandum* (2015) for more information (refer to these memoranda in Appendix C).

The study area for the traffic analysis includes intersections at or adjacent to a proposed at-grade light rail/roadway crossings or at roadways/driveways associated with a proposed light rail station or park-and-ride lot, as illustrated on Exhibit 4.2-1. The study area generally falls within a 300-foot radius of the Project alignment.

4.2.2 Affected Environment

This section describes the performance of the regional roadway system and the local roadway network.

4.2.2.1 Regional Highway Network

The regional highway and roadway network comprises interstate and other federal highways, state highways, county highways, and other selected roadways throughout the Twin Cities Metropolitan Area.¹⁵ The Twin Cities Metropolitan Area has 17,500 miles of roads, including 2,600 miles of principal and A-minor arterials, which constitute the region’s federal-aid highway system. These roadways make up only 15 percent of the roadway miles but carry 75 percent of the region’s traffic.

The Metropolitan Council 2040 Transportation Policy Plan (TPP) (2015) indicates that the existing roadway network is expected to experience a substantial increase in vehicle demand by the year 2040. In 2010, the regional VMT on the roadway network was approximately 72.9 million daily VMT.¹⁶ By 2040, the regional VMT is forecast to increase approximately 23 percent to 89.4 million daily VMT.

Table 4.2-1 shows the existing regional population and regional travel demand on the roadway network in 2010 (actual)¹⁷ and 2040 (forecast), in terms of average weekday vehicle trips, daily VMT, and daily VMT per resident. The forecast travel behavior is based on the operation of all planned transit service in 2040, including the Southwest LRT (METRO Green Line extension), the METRO Blue Line Extension, and other transit improvements. This increase in transit service, along with other changes in travel behavior, is forecast to result in an increase in average weekday transit ridership, which in turn is forecast to result in a decrease in average weekday VMT per resident in the metro region. Exhibit 4.2-2 illustrates the congestion levels on principal arterials in 2013, and the forecasted congestion levels on principal arterials in 2040.

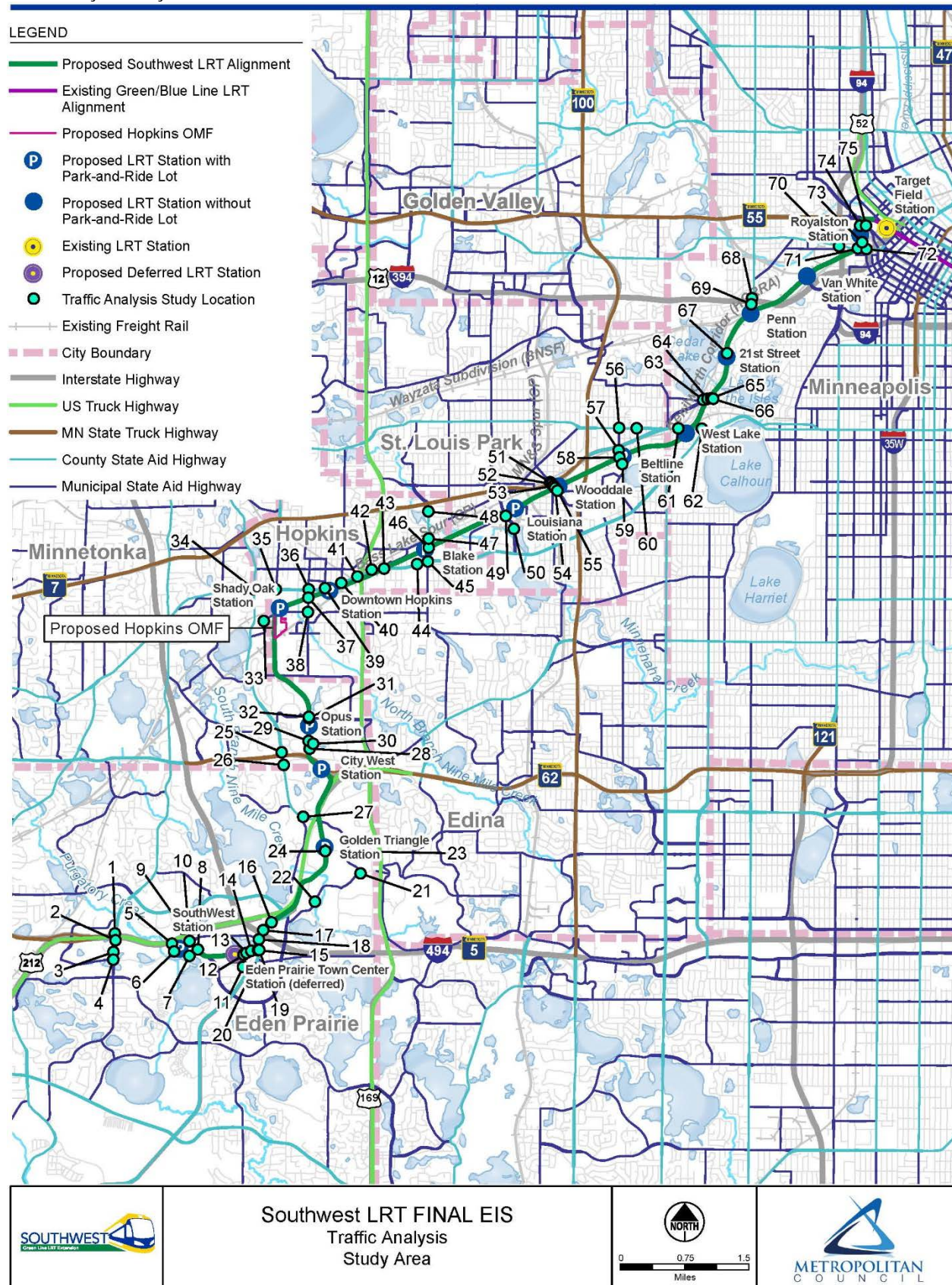
¹⁵ The Twin Cities Metropolitan Area includes seven counties: Hennepin County, Ramsey County, Dakota County, Anoka County, Washington County, Scott County, and Carver County.

¹⁶ VMT is a measurement of miles traveled by vehicles in a specified region for a specified time period. One vehicle traveling one mile equals one VMT.

¹⁷ Based on data included in the 2040 TPP (2015). The base year for the analysis in this document is 2010.

EXHIBIT 4.2-1

Traffic Analysis Study Area



Portions of many of the principal arterial roadways near the proposed Project are projected to experience congestion in 2040, including I-494, I-35W, I-394, Highway 7, Highway 169, Highway 100, Highway 62, and Highway 212.

TABLE 4.2-1

Average Weekday Vehicle Trips and Vehicle Miles Traveled in 2010 and 2040, Region Wide

Travel Demand Metric	2010	2040	Change	Percent Change
Population	2,850,000	3,673,860	+823,860	+29%
Daily Vehicle Trips	6,600,000	9,776,000	+2,152,000	+28%
Daily VMT	72,900,000	89,420,000	+16,520,000	+23%
Daily VMT per Resident	25.6 miles per resident in 7-county metro region	24.3 miles per resident in 7-county metro region	-1.3 mile per resident in 7-county metro region	-5%

Source: 2040 TPP (Council, 2015).

4.2.2.2 Local Roadways and Intersections

The regional highway system is supplemented by a network of county and city roadways throughout the Project study area. These roadways provide for short to medium length trips in the study area as well as access to/from proposed park-and-ride facilities. Existing daily traffic volumes for key roadways in the study area are illustrated in Exhibits 4.2-3 and 4.2-4.

A traffic operations analysis was completed for the existing conditions for the key intersections within the study area. Traffic operations were evaluated based on two criteria: overall intersection LOS, which is based on average vehicle delay, and traffic queues. Table 4.2-2 shows the existing traffic operations for each of the traffic analysis areas evaluated. This includes an evaluation of existing intersection LOS for the AM and PM peak hour (see Section 4.2.1.3 for a description of methodology). For a detailed description of the traffic operations analysis for the existing condition (2014), including a description of the location of traffic movements with queuing issues, refer to the *PEC-West Traffic Memorandum* (2015) and *PEC-East Traffic Memorandum* (2015). As shown in Table 4.2-2, all of the intersections evaluated operate at LOS D or better in the existing AM and PM peak hour conditions, with the following exceptions:

- Flying Cloud Drive and Valley View Road (AM peak hour)
- Bren Road East and Red Circle Drive (AM peak hour)

4.2.2.3 No Build Alternative

The analysis of the No Build Alternative is based on the average daily traffic volumes for the 2040 forecast year (see Exhibits 4.2-3 and 4.2-4), existing roadway geometrics and freight rail crossing treatments, existing signal operations, and currently programmed projects, as included in the Council's *2040 Transportation Policy Plan* (2015). The No Build Alternative traffic analysis is based on optimized signal timing in 2040, but no changes were made to the existing signal phasing.

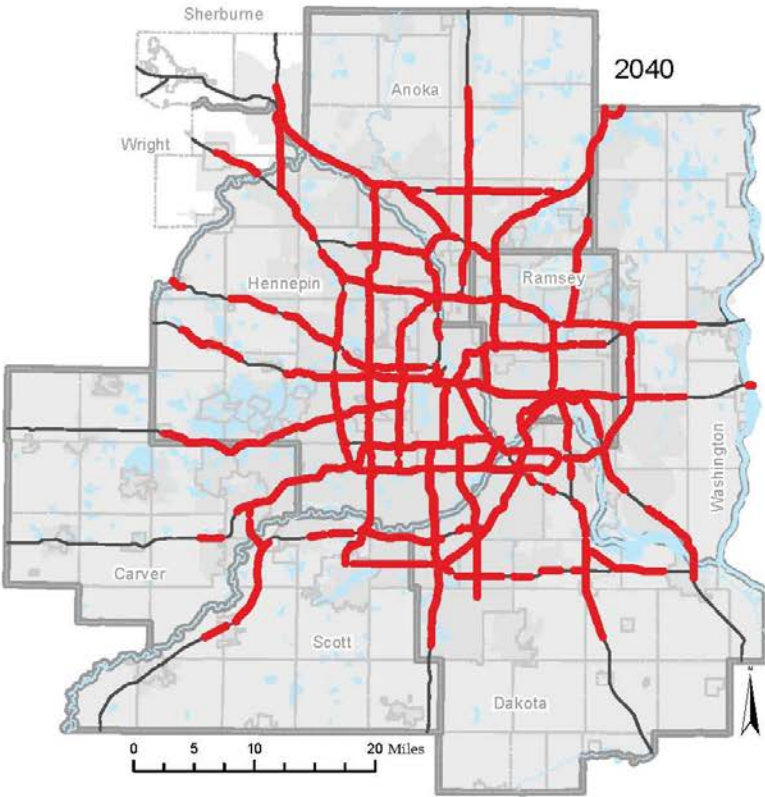
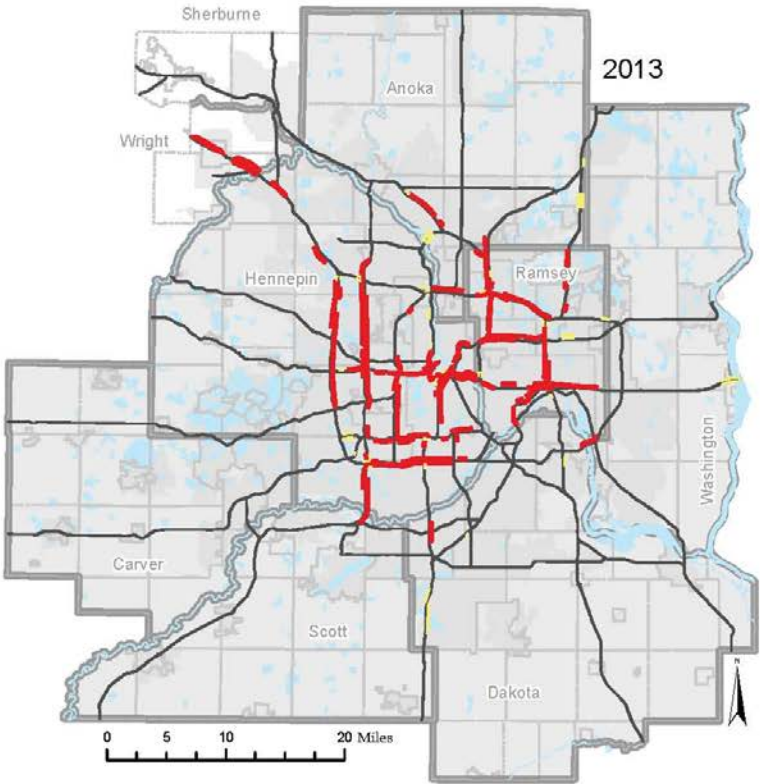
Refer to Section 2.1.4.1.C for a list of programmed improvements included in the No Build Alternative. The *PEC-West Traffic Memorandum* (May 2015) and *PEC-East Traffic Memorandum* (May 2015) (see Appendix C) include intersection schematics showing the changes in roadway geometry over existing conditions included in the 2040 No Build Alternative. Refer to Table 4.2-2 for the 2040 No Build traffic operations analysis, which includes an evaluation of 2040 No Build intersection LOS for the AM and PM peak hour. For a detailed description of the traffic operations analysis for the No Build Alternative (2040), including a description of the location of traffic movements with queuing issues, refer to the *PEC-West Traffic Memorandum* (2015) and *PEC-East Traffic Memorandum* (2015). As shown in Table 4.2-2, all of the intersections evaluated operate at LOS D or better in the forecasted 2040 No Build Alternative AM and PM peak-hour conditions, with the following exceptions:

- Technology Drive and SouthWest Station East Driveway (PM peak hour)
- Prairie Center Drive and Technology Drive (PM peak hour)
- Prairie Center Drive/Technology Drive and WB Highway 5/Highway 212 Ramp (PM peak hour)
- Prairie Center Drive/Technology Drive and EB Highway 5/Highway 212 Ramp (PM peak hour)

EXHIBIT 4.2-2
Congested Principal Arterials

LEGEND

- Principal Arterial Highways
- Lakes and Rivers
- City Boundary
- County Boundary
- 2040 Urban Service Area
- MPO Area
- Congested Principal Arterial Segments
- No Data



Source: [http://www.metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan-\(1\)/The-Adopted-2040-TPP-\(1\).aspx](http://www.metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan-(1)/The-Adopted-2040-TPP-(1).aspx)



Southwest LRT FINAL EIS
Congested Principal Arterials
in 2013 and 2040



EXHIBIT 4.2-3

Existing and Forecast (No Build) Average Daily Traffic Volumes – Eden Prairie, Minnetonka, and Hopkins

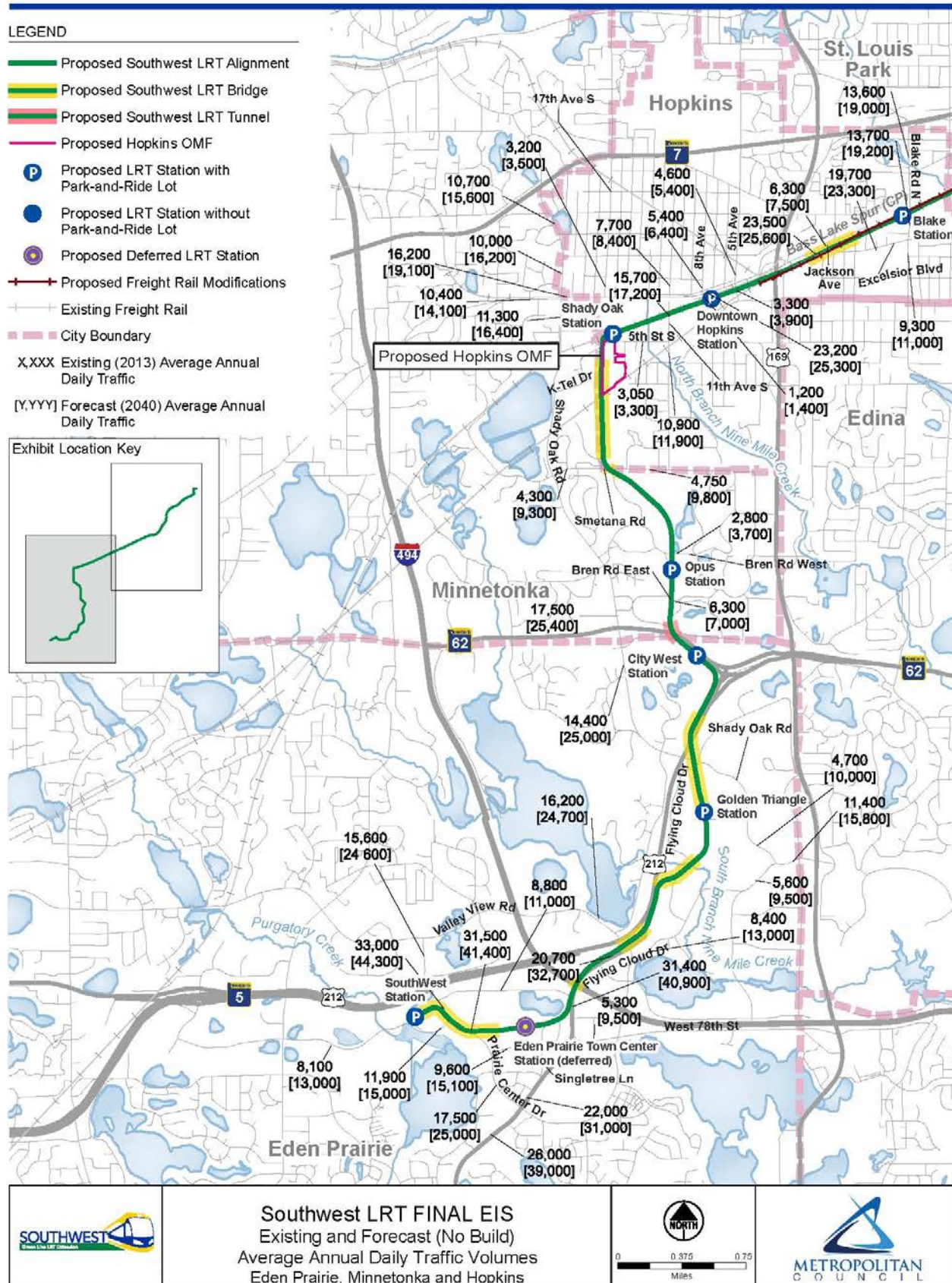


EXHIBIT 4.2-4

Existing and Forecast (No Build) Average Daily Traffic Volumes – St. Louis Park and Minneapolis

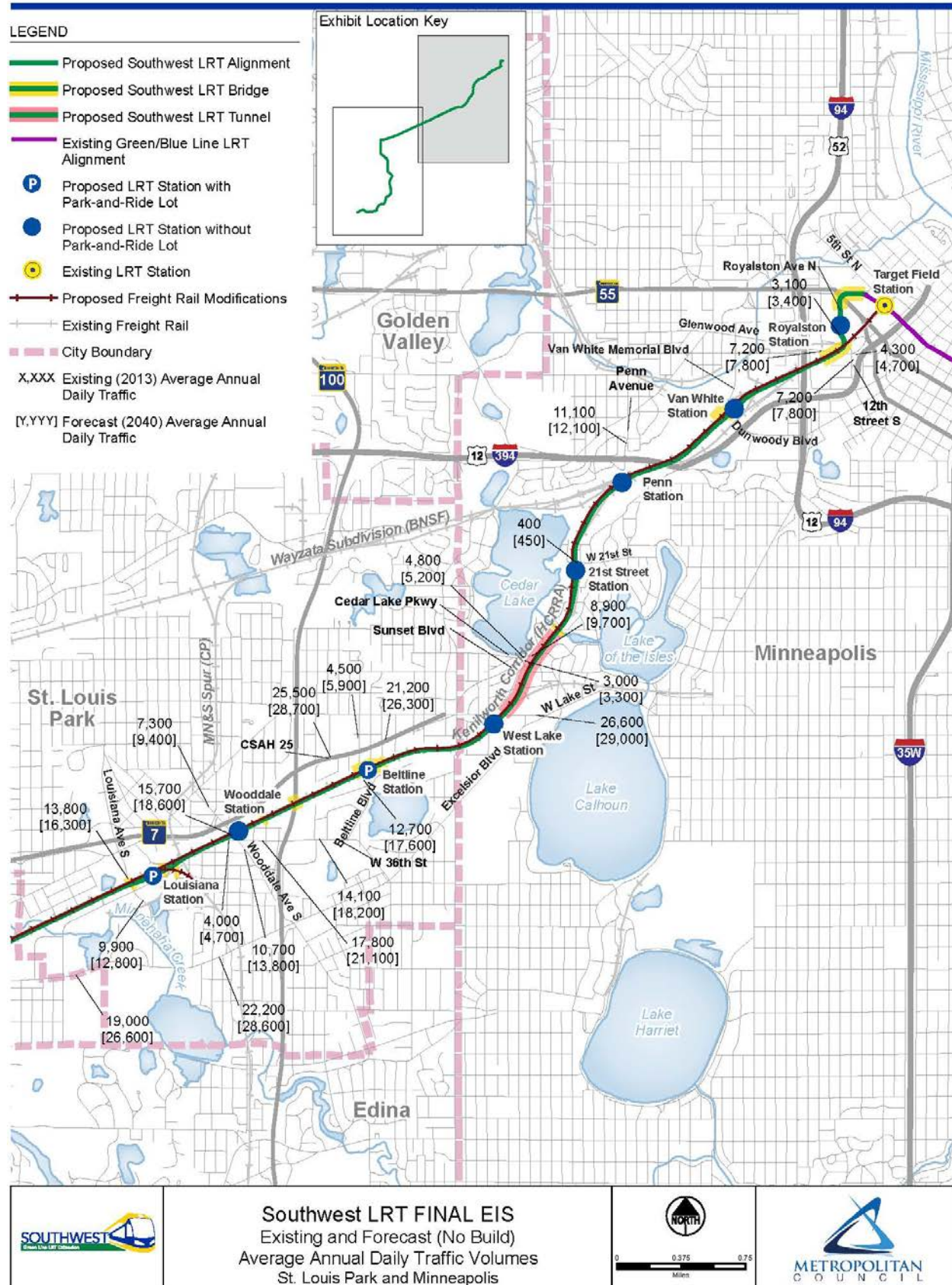


TABLE 4.2-2

Peak-hour Traffic Operations Analysis for Existing Conditions (2014), No Build Alternative (2040), and the Project (2040)

Map ID ^a	Intersection or LRT Crossing	Existing Conditions (2014) ^a		No Build Alternative (2040) ^a		Project (2040) ^a	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
1	Mitchell Rd//WB Hwy 5/Hwy 212 Ramp	B	C	B	C	B	C
2	Mitchell Rd//EB Hwy 5/Hwy 212 Ramp	A	B	B	B	B	B
3	Mitchell Rd/Lone Oak Rd	A	A	A	B	A	C
4	Mitchell Rd/Technology Dr	C	C	C	D	C	D
5	Technology Dr/SouthWest Station Bus Access	A	A	A	A	A	A
6	Technology Dr/SouthWest Station West Access	A	A	A	C	A	C
7	Technology Dr/SouthWest Station East Access	A	A	A	E	B	E
8	Technology Dr/Prairie Center Dr	C	C	B	E	C	E
9	Prairie Center Dr/Technology Dr (and WB Hwy 5/Hwy 212 ramp)	C	C	D	F	C	F
10	Prairie Center Dr/Technology Dr (and EB Hwy 5/Hwy 212 ramp)	B	C	C	F	C	E
11	Main St/Singletree Lane	A	A	A	B	A	C
12	Eden Road/Main St ^b	N/A	N/A	N/A	N/A	C	D
13	Eden Rd/Eden Extension/Redstone Driveway ^c	N/A	N/A	N/A	N/A	C	D
14	Eden Rd/Glen Lane	A	A	A	A	A	A
15	Eden Rd/Leona Dr/Flying Cloud Dr	A	B	B	C	B	C
16	Flying Cloud Dr/Valley View Dr	E	C	E	C	E	C
17	Flying Cloud Dr/Viking Dr	A	C	C	D	C	B
18	Flying Cloud Dr/WB I-494 Ramp	B	C	B	D	C	D
19	Flying Cloud Dr/ EB I-494 Ramp	A	B	B	C	C	D
20	Flying Cloud Dr/Eden Rd/Leona Dr	A	B	B	C	B	C
21	Flying Cloud Dr/Singletree Lane	B	C	B	D	B	D
22	Shady Oak Rd/Valley View Rd	A	A	B	E	B	C
23	Shady Oak Rd/70th St	A	A	B	F	B	F
24	Proposed 70th St LRT Grade Crossing ^c	N/A	N/A	N/A	N/A	A	A
25	Shady Oak Rd/WB Hwy 62 Ramp	B	B	C	C	C	C
26	Shady Oak Rd/EB Hwy 62 Ramps/W 62nd St	B	A	D	D	D	D
27	Shady Oak Rd/City West Pkwy	C	C	C	C	C	C
28	Yellow Circle Dr/Red Circle Dr ^c	N/A	N/A	N/A	N/A	A	A
29	Bren Rd East/Red Circle Dr/Proposed LRT Grade Crossing	F	A	F	A	A	A
30	Yellow Circle Dr/Yellow Circle Dr ^c	N/A	N/A	N/A	N/A	A	A
31	Bren Rd E/Bren Rd W ^c	A	A	A	A	A	A
32	Bren Rd W LRT Grade Crossing ^c	N/A	N/A	N/A	N/A	A	A
33	K-Tel Dr/5th St S Crossing ^c	N/A	N/A	N/A	N/A	A	A
34	Excelsior Blvd/Shady Oak Rd	C	C	D	D	D	D
35	Excelsior Blvd/17th Ave S	A	B	A	B	B	B
36	Excelsior Blvd/11th Ave S	B	C	C	C	B	C
37	Proposed 11th Ave S LRT Grade Crossing ^c	N/A	N/A	N/A	N/A	A	A
38	11th Ave S/5th St S	A	B	A	B	A	B
39	Excelsior Blvd/8th Ave S	B	C	B	C	C	C
40	Excelsior Blvd/5th Ave S	B	C	C	C	C	C
41	Excelsior Blvd/Hwy 169 Southbound Ramps	C	B	C	B	C	B
42	Excelsior Blvd/Hwy 169 Northbound Ramps	D	C	D	C	D	C

Map ID ^a	Intersection or LRT Crossing	Existing Conditions (2014) ^a		No Build Alternative (2040) ^a		Project (2040) ^a	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
43	Excelsior Blvd/Jackson Ave/Milwaukee St	D	C	D	C	D	D
44	Excelsior Blvd/Pierce Ave	A	A	A	A	B	B
45	Excelsior Blvd/Blake Rd	D	D	D	D	D	D
46	Blake Rd/Rail Crossing	A	A	A	A	A	A
47	Blake Rd/2nd St NE	B	B	B	B	B	C
48	Blake Rd/Cambridge St	B	B	B	B	B	C
49	Louisiana Ave/Oxford St	A	A	A	B	B	B
50	Louisiana Ave/Louisiana Circle	A	A	A	A	B	B
51	Wooddale Ave/Hwy 7 Westbound Ramps	A	A	A	A	B	B
52	Wooddale Ave/Hwy 7 Eastbound Ramps	A	A	A	D	A	B
53	Wooddale Ave/Hwy 7 South Frontage Rd	A	A	A	B	A	B
54	Wooddale Ave/Rail Crossing	A	A	A	A	A	A
55	Wooddale Ave/W 36th St	B	B	B	B	C	C
56	Beltline Blvd/West Lake Street	C	D	C	D	C	D
57	Beltline Blvd/Hwy 7 South Frontage Rd	B	C	B	F	A	B
58	Beltline Blvd/Rail Crossing	A	A	A	D	A	A
59	Beltline Blvd/Park Glen Rd	A	A	B	D	C	A
60	West Lake Street/Lynn Ave	A	A	A	A	A	B
61	W Lake St/Drew Ave	A	A	A	A	A	A
62	W Lake St/Market Plaza	C	C	C	C	C	C
63	Cedar Lake Pkwy/Sunset Blvd	A	A	A	A	A	A
64	Cedar Lake Pkwy/Rail Crossing/Burnham Rd	A	A	A	A	A	A
65	Cedar Lake Pkwy/Xerxes Ave	A	A	A	A	A	A
66	Cedar Lake Pkwy/ Benton Blvd	A	A	A	A	A	A
67	21st St W/Rail Crossing	A	A	A	A	A	A
68	Penn Ave/I-394 Westbound Ramps	B	B	B	B	B	B
69	Penn Ave/I-394 Eastbound Ramps	A	B	B	B	B	B
70	Glenwood Ave/E Lyndale Ave	C	C	C	C	B	C
71	Glenwood Ave/LRT Crossing ^c	N/A	N/A	N/A	N/A	A	A
72	Glenwood Ave/Royalston Ave/12th St N/Twins Way	C	C	C	C	B	C
73	Royalston Ave/Holden St	A	A	A	A	B	B
74	Royalston Ave/5th Ave N	A	A	A	A	A	A
75	7th St N/5th Ave N	A	A	A	A	C	B

^a Map ID corresponds to the labeling on the map presented in Exhibit 4.2-1.

^b LOS = level of service; LOS A – D are characterized as uncongested and LOS E – F are characterized as congested. Bold text indicates congestion.

^c New roadway or new at-grade roadway/LRT crossing built with the Project. Not applicable to existing conditions or the No Build Alternative. N/A = not applicable.

Source: PEC-West Traffic Memorandum, 2015 and PEC-East Traffic Memorandum, 2015.

- Flying Cloud Drive/Valley View Road (AM peak hour)
- Shady Oak Road and Valley View Road (PM peak hour)
- Shady Oak Road and West 70th Street (PM peak hour)
- Bren Road East and Red Circle Drive (AM peak hour)
- Beltline Boulevard and Highway 7 south frontage road

4.2.3 Environmental Consequences

4.2.3.1 Long-term Direct Impacts on Roadways and Traffic

This section identifies the long-term and short-term direct and indirect impacts on roadways and traffic from the No Build Alternative and the Project.

The Project will result in physical modifications to existing roadways and intersections that will affect local circulation patterns. None of these modifications are anticipated to have an impact on the regional roadway system as these changes will occur on the local roadway systems. A complete list of roadway and intersection modifications that will be implemented with the Project is included in the Roadway Improvements Table and Preliminary Engineering Plans found in Appendix E.

The analysis of the traffic impacts for the Project is based on the average daily traffic volumes for the forecast year (see Exhibits 4.2-3 and 4.2-4), proposed traffic control at intersections and rail crossings, existing and proposed signal operations, and other roadway and geometric improvements included in the Project. Locally Requested Capital Investments (LRCIs) were also included in the traffic operations analysis for the Project (refer to Appendix E for a description of LRCIs). A sensitivity analysis that discusses the traffic implications of not implementing the LRCIs with the Project is included at the end of this section.

At proposed light rail stations, additional pedestrian volumes were incorporated into the modeling and additional vehicle traffic was added to the roadway network to account for traffic generated by park-and-ride lots. The control of each of the proposed light rail crossings was identified based on the proximity to the freight rail alignment and adjacent signalized intersections. Refer to Section 4.6, Safety and Security, (see Table 4.6-1) for a description of the existing and proposed traffic control for intersections and light rail crossings affected by the Project.

Signal phasing was also modified at several locations to provide protected-only turn phasing for turn movements across the tracks and to provide the ability to run signal phases to clear the tracks when a train is approaching where signal preemption was modeled. Signal timing in the traffic model was optimized for all traffic signals with the Project.

Impact Avoidance and Minimization Measures

As noted in Section 4.2.1.3, roadway and intersection improvements were incorporated into the Project to avoid new or worsened congested intersections, compared to the No Build Alternative in 2040, and the proposed improvements are reflected in the traffic operations analysis. These roadway and intersection improvements included in the Project are shown in Table 2.1-3 and are illustrated in the Preliminary Engineering Plans (see Appendix E).

A series of intersection schematics for each of the intersections included in the traffic operations analysis, showing the existing conditions and changes in intersection geometrics for the 2040 No Build Alternative and the Project are included in Appendix B of the *PEC-West Traffic Memorandum* (2015) and *PEC-East Traffic Memorandum* (2015).

Traffic Operations Analysis

Traffic operations for the Project in 2040 (average weekday) were evaluated based on overall intersection LOS and traffic queues (refer to Section 4.2.1 for a description of methodology). Refer to Table 4.2-2 for a summary of the traffic operations analysis for the Project in 2040; the table includes a summary of intersection LOS for average weekday a.m. and p.m. peak hours. For comparison, the table also includes a summary of traffic operations for the No Build Alternative in 2040. For a detailed description of the traffic

operations analysis for the Project, including a description of the location of traffic movements with queuing issues, refer to the *PEC-West Traffic Memorandum* (2015) and *PEC-East Traffic Memorandum* (2015). In summary, of the 75 intersections analyzed:

- No intersections that would operate at LOS A to D under the No build Alternative will operate at LOS E or F under the Project.
- Three intersections that would operate at LOS E or F under the No Build Alternative will be improved to LOS A through D under the Project.
- Six intersections that would operate at LOS E or F under the No Build Alternative will continue to operate at LOS E or F under the Project.

Operations and Maintenance Facility

An OMF will be constructed as part of the Project and will be located in the southwest quadrant of the K-Tel Drive and 15th Avenue South intersection in the city of Hopkins. When the OMF is constructed, 16th Avenue South will be permanently vacated between 5th and 6th Streets South and a cul-de-sac will be constructed on 6th Street South, south of Sixth Street. A new street (5½ Street) will be constructed between Fifth Street and Sixth Street. The partial acquisition of the parcel at 510 15th Avenue South will eliminate one access point to the property on 16th Avenue South, and this will be replaced from the new 5½ Street South. The parcel will continue to have one access on 6th Street South and one access on 15th Avenue South.

A traffic analysis was completed for the OMF to determine if it would create any traffic impacts. The existing land use is industrial park with an existing 223,000-square foot building. Trips that will be generated by the OMF were compared to trips generated by the existing uses at full capacity. Based on this comparison, the OMF will generate fewer trips than the existing land uses.

The OMF will not substantially impact any arterial roadways and will not result in changes to any signalized intersections. In addition, the OMF will not substantially change traffic patterns in the area as it will have similar characteristics to the industrial uses currently in place and is expected to decrease trip generation over the current use. Therefore, the OMF will not generate long-term traffic impacts.

Locally Requested Capital Investments

The potential long-range impacts of several LRCI improvements requested and funded by local agencies were analyzed as part of the Project. These LCRI projects include:

- Construction of Main Street from Singletree Lane to Eden Road
- Construction of 17th Avenue extension to K-Tel Drive
- Intersection capacity improvements at the Beltline Boulevard/West Lake Street intersection

The traffic analysis showed that all intersections would continue to operate at LOS D or better in 2040 if the LCRI improvements are not constructed. The only notable difference in intersection operations if the LRCI improvements are not completed at Beltline Boulevard will be that the westbound approach on Beltline Boulevard at Highway 25 will have more delay and queuing, but the intersection would still operate at a LOS D or better during the AM and PM peak hour and queuing would not exceed available storage.

4.2.3.2 Long-term Indirect Impacts on Roadways and Traffic

The Project will have an indirect effect on the roadway network. The areas of indirect impact on roadways and traffic include additional vehicle traffic from the anticipated new development surrounding the light rail stations, and a decrease in auto trips on the surrounding roadway network as people switch from auto to transit.

The traffic assessment described in Section 4.2.3.1 was based on the regional travel demand model (refer to Section 4.2.1 for a description of the methodology) which includes 2040 population and employment forecasts that include current and reasonably foreseeable future actions, such as station area development. Based on this information, the Project includes capacity upgrades and improvements in locations that could realize the indirect impact of increased traffic generated in station areas.

4.2.3.3 Short-term Impacts on Roadways and Traffic

Construction of the Project will require activities that may result in short-term impacts, such as:

- Relocation of existing utilities
- Removal of existing surface features within the right-of-way or between the curbs
- Excavation and construction of new subsurface features required for the LRT system and adjacent roadways including stormwater drainage systems and various electrical facilities
- Construction of new light rail track, stations, electrical power systems, roadways, and bridges
- Installation of above ground light rail system operation facilities

Construction of the Project will result in temporary partial, and full closures of existing streets as well as material and equipment deliveries, worker arrivals and departures, and hauling of excavation and borrow materials. Locations where temporary traffic impacts are expected to occur during construction of the Project are shown in Table 4.2-3 (see Section 4.2.4 for mitigation measures). Construction of the Project will also result in temporary, partial, and full closures of driveways while construction is occurring at those locations.

TABLE 4.2-3
Short-term Roadway and Traffic Impacts during Construction

Location	Short-term Impact	Related Construction Activity
Hwy 212/Prairie Center Dr Interchange Ramps	Turn lane closures	Adjacent track and retaining wall construction
Hwy 212/Prairie Center Dr/Bus Only Access Ramp	Lane closure or shift	Maintaining bus only access to SouthWest Station during construction
Prairie Center Dr	Lane closures or shifts	Bridge, roadway, signal, utility construction
Eden Rd/Glen Lane	Lane closures or shifts or medium term closures or detours	Road reconstruction, track, signal, utility construction
Flying Cloud Dr (Eden Rd to Valley View Rd)	Lane closures/shifts	Widening and reconstruction, track, utility, bridge construction
Technology Dr (west of Flying Cloud Dr)	Lane closures or medium term closures or detours ^a	Road reconstruction, track, signal, utility construction
I-494	Shoulder closures and short-term closures ^a	Bridge construction
Valley View Rd	Lane closures or shifts and short term closures ^a	Bridge and utility construction
Hwy 212 (north of Valley View Rd)	Shoulder closures and short-term closures ^a	Retaining wall, track, utility construction
Flying Cloud Dr (near Nine Mile Creek and Shady Oak Rd interchange)	Lane closures or shifts and short-term closures ^a	Utility and bridge construction
W 70th St	Lane closures or shifts	Road, track, station site, utility construction
Shady Oak Rd at Valley View Rd intersection	Lane closures or shifts	Intersection control and driveway relocation improvements
Shady Oak Rd at W 70th St intersection	Lane closures or shifts	Intersection control
Shady Oak Rd	Shoulder closures and short-term closures ^a	Bridge, track, utility construction
Hwy 212 (north of Shady Oak Rd)	Shoulder closures and short-term closures ^a	Bridge, track, utility construction
W 62nd St	Lane closures or shifts ^b	Track, tunnel, roadway, station site, utility construction
Hwy 62	Shoulder closures and traffic bypasses	Tunnel construction
Bren Rd W, Bren Rd E, Red Circle Dr, Yellow Circle Dr	Lane closures or shifts; possible longer term closures of roadway segments	Bridge, track, and utility construction ^c

Location	Short-term Impact	Related Construction Activity
Feltl Rd	Lane closures or shifts; bypasses; possible longer term closure	Bridge, track, and utility construction
Smetana Rd	Lane closures or shifts; bypasses; possible longer term closure	Bridge, track, and utility construction
16th Ave	Full closure	Roadway no longer exists with OMF
15th Ave	Lane closures or shifts	OMF construction
6th St	Lane closures or shifts	OMF construction
K-Tel and 5th	Lane closures or shifts; bypasses; possible longer term closure	Track, road, utility construction
Excelsior Blvd	Lane closures or shifts	Turn lane widening, utility construction
17th Ave	Lane closures or shifts	Turn lane widening, signal construction
11th Ave	Lane closures or shifts	Widening and reconstruction, signal, utility, track construction
8th Ave S	Lane closures or shifts	At-grade gated crossing and reconstruction
Excelsior Blvd at 8th Ave S	Lane closures or shifts	Reconstruction of intersection
5th Ave S	Lane closures or shifts	At-grade gated crossing and reconstruction
Hwy 169 EB and WB Ramps at Excelsior Blvd	Traffic impacts due to construction traffic	Adjacent intersection reconstruction west and east of this location
Excelsior Blvd at Jackson Ave N/Milwaukee St	Lane closures or shifts	Bridge construction, at-grade freight rail crossing and reconstruction
St. Louis St	Traffic impacts due to construction traffic	Adjacent track and retaining wall construction and intersection construction
Blake Rd	Lane closures or shifts	At-grade gated rail crossings and reconstruction
Excelsior Blvd at Pierce Ave	Lane closures or shifts	Construction of Pierce Ave access road and traffic signal
Louisiana Ave S	Lane closures or shifts	Bridge reconstruction
Oxford St/Edgewood Ave S	Lane closures or shifts	Bridge and roadway reconstruction
Wooddale Ave S	Lane closures or shifts	At-grade gated rail crossings and reconstruction
Hwy 7	Traffic impacts due to construction traffic	Adjacent intersection reconstruction and traffic signals
Yosemite Ave S/W 35 th St	Lane closures or shifts	Sidewalk construction
Hwy 100	Lane closures or shifts	Bridge construction
Beltline Blvd	Lane closures or shifts	At-grade gated rail crossings and reconstruction
Hwy 25	Lane closures or shifts	Add turn lane; Beltline Blvd reconstruction
Lynn Ave/Hwy 7 service road/Hwy 25	Lane closures or shifts	Reconfiguration of intersection
W Lake St	Lane closures or shifts	Add barrier and sidewalk on bridge, pedestrian facility upgrades
Excelsior Blvd (W 32nd St to Market Plaza)	Lane closures or shifts	Pedestrian facility updates and sidewalks
Abbott Ave/Chowen Ave/W 32nd St	Lane closures or shifts	LRT tunnel, reconstruction
Cedar Lake Pkwy/Burnham Rd	Lane closures or shifts	At-grade gated rail crossings, reconstruction
W 21st St	Lane closures or shifts	At-grade gated rail crossings, reconstruction, station construction

Location	Short-term Impact	Related Construction Activity
W 22nd St/Thomas Ave S/West 24th St	Lane closures or shifts	Intersection reconstruction, sidewalks
Penn Ave S	Lane closures or shifts	Add sidewalks, remove SB right-turn lane at I-394 ramps, pedestrian ramp upgrades
S Wayzata Blvd/I-394 ramps	Lane closures or shifts	Add sidewalk and passenger drop-off connection to Penn Station
Van White Blvd	Lane closures or shifts	Reconstruct access road and Luce Line pedestrian bridge
Dunwoody Blvd	Traffic impacts due to construction traffic; lane closures and shifts	Pedestrian facility upgrades, sidewalks and pedestrian lighting
Glenwood Ave	Full closure	Bridge and retaining wall construction
Royalston Ave	Lane closures or shifts	Intersection and station construction
Holden St N	Lane closures or shifts	Roadway and intersection reconstruction
Border Ave	Lane closures or shifts	Roadway and intersection reconstruction
3rd Ave N at Border Ave	Lane closures or shifts	Intersection reconstruction
Cesar Chavez Ave at Border Ave	Lane closures or shifts	Intersection reconstruction
Lakeside Ave at Border Ave	Lane closures or shifts	Intersection reconstruction
E Lyndale Ave	Traffic impacts	Reconstruction of Holden St and closure of Glenwood Ave
N 7th St	Lane closures or shifts	Bridge construction
6th Ave N	Traffic impacts due to construction traffic	Adjacent track and retaining wall construction
5th Ave N	Lane closures or shifts	Roadway and bridge construction
N 12th St/11th St N	Traffic impacts due to construction traffic	Roadway and intersection reconstruction
Olson Memorial Highway	Traffic impacts due to construction traffic	Adjacent track and retaining wall construction
N Fremont Ave	Lane closures or shifts	Roadway reconstruction
N 7th St/10th St N	Lane closures or shifts	Construction of protected bike lane

^a Up to approximately overnight or weekend.

^b Closure for duration of light rail construction if the United Health Group campus improvements occur after completion of Project construction in the area.

^c The City of Minnetonka will reverse traffic flow on Red Circle Drive to support the needs of the Project.

Source: Council, 2015.

4.2.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term roadway and traffic impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Section 4.2.3 for additional information on the identified roadway and traffic impacts and avoidance measures).

4.2.4.1 Long-term Mitigation Measures

No mitigation measures are warranted for long-term impacts to roadways and traffic because there will be no adverse impacts, due to the effectiveness of identified avoidance measures. As described in Section 4.2.3.1, the Project includes a variety of roadway modifications that will avoid any new congested intersections, and the Project will not worsen conditions at intersections that would be congested under the No Build Alternative in 2040 (see Appendix E for a listing of those roadway modifications).

4.2.4.2 Short-term Mitigation Measures

Impact. Project construction will result in temporary partial and full closures of existing streets as well as material and equipment deliveries, worker arrivals and departures, and hauling of excavation and borrow materials.

Mitigation. Mitigation measures for short-term (construction) impacts to roadways and traffic will be implemented by the Council prior to and during construction through the Construction Mitigation Plan, which includes a Construction Communication Plan and a construction staging plan. MnDOT, Hennepin County, and all municipalities affected by construction activities related to the Project will require compliance with applicable state and local regulations related to the closing of roadways and the effects of construction activities. Contractors will be required to comply with all guidelines established in the *Minnesota Manual on Uniform Traffic Control Devices* (2015). Construction staging and mitigation documents will be reviewed by appropriate jurisdictions, and required permits will be secured. Traffic control plans will be developed by the contractor based on information identified in the construction documents and the Construction Mitigation Plan. Traffic control plans will be reviewed by appropriate jurisdictions and the Council prior to the initiation of construction activities.

4.3 Parking

This section describes the long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on personal automobile parking, based on an assessment of changes to on-street and off-street parking (see Section 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis; an assessment of the existing built environment as it relates to parking; a description of the anticipated impacts related to on- and off-street parking; and a description of mitigation measures to implement with the Project.

4.3.1 Regulatory Context and Methodology

The Project is consistent with the Council's 2040 Transportation Policy Plan and its goal to partner with local jurisdictions to implement travel demand management strategies, which include promoting multimodal travel options and alternatives to single-occupant vehicle travel on congested highway corridors and corridors served by regional transit service, such as avoiding the oversupply of parking. Local municipalities have regulatory controls available to them in the form of comprehensive plans and city zoning codes guiding development, which may include parking requirements. There are no other specific laws or executive orders regulate the consideration of parking impacts as part of preparing federal environmental review documents.

The study area for the parking analysis includes the limits of disturbance for the Project (See Appendix E). Existing on-street and off-street parking spaces the Project will directly affect were inventoried based on preliminary engineering information and a review of aerial photography. Existing loading zones and handicapped parking spaces were also considered in this evaluation. The number of parking spaces that will be provided at new park-and-ride facilities included in the Project are also described.

Parking impacts in the study area are classified as either permanent or temporary. Permanent parking effects consist of permanent loss of parking spaces that will not be reconstructed in their existing location or replaced at another location. Temporary parking effects consist of parking spaces that will be temporarily lost due to construction and will be unavailable for some duration during construction but would be available after construction or relocated to another location.

4.3.2 Affected Environment

This section describes the existing conditions for parking within the parking study area. Parking for personal automobiles consists of a mix of privately-owned, off-street parking; on-street public parking; and publicly-owned surface parking lots (e.g., park-and-ride lots, bus stops, and trailhead locations).

The majority of the parking spaces within the parking study area are located within off-street surface parking lots. Off-street parking is typically associated with privately-owned businesses, such as office complexes, commercial retail businesses, industrial sites, and residential complexes. There are also some

publicly-owned off-street parking lots within the study area (e.g., existing public park-and-ride lots and trailhead locations).

In addition to off-street parking lots, some areas within the parking study area permit on-street parking. On-street parking is typically located on local streets and can be metered or not metered. Most of the on-street parking within the parking study area is located within the City of Minneapolis, but there are some areas where on-street parking is permitted in the Cities of Hopkins and St. Louis Park.

Table 4.3-1 shows the total number of existing parking spaces within the parking study area, by city, including both off-street parking lots (public and private) and on-street parking spaces. There are 20,915 on- and off-street parking spaces in the parking study area.

TABLE 4.3-1
Existing Parking within the Study Area

City	Total Parking Spaces ^a
Eden Prairie	8,572
Minnetonka	4,327
Hopkins	2,686
St. Louis Park	3,161
Minneapolis	2,169
Total	20,915

^a Includes the total number off-street and on-street parking spaces within the parking study area

4.3.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts on parking from the Project.

4.3.3.1 Long-term Direct Impacts on Parking

Under the Project, there will be some changes to on- and off-street parking. Changes to off-street parking will be related to land acquisitions (refer to Section 3.4 for additional information on acquisitions), and changes to on-street parking will occur in some areas where changes to existing roadways are needed to accommodate the Project. Overall, the Project will reduce the supply of off-street parking by eliminating 692 spaces and the supply of on-street parking will be reduced by 57 spaces (see Exhibits 4.3-1 and 4.3-2).

Off-Street Parking

Potential changes to off-street parking under the Project are illustrated in Exhibits 4.3-1 and 4.3-2. The overall effect of the Project on off-street parking spaces along the corridor was evaluated in terms of proposed changes to available parking supply. This analysis considers reductions in off-street parking spaces related to acquisitions where the building and business will remain.¹⁸

The Project will have a long-term direct effect on off-street parking, as it will reduce off-street parking supply within 16 properties in the Cities of Eden Prairie, Minnetonka, and Hopkins. All of these properties are currently under commercial (e.g., office, retail) or industrial use, with the exception of one mixed-use (i.e., commercial/residential) property in Eden Prairie. Because the existing buildings and businesses could remain, the demand for off-street parking at these locations could exceed supply (see Exhibits 4.3-1 and 4.3 2).¹⁹

¹⁸ Demand for parking is generated based on land use. For instances where a parcel of land will be fully acquired and the existing uses eliminated, the related demand for parking will also be eliminated. Because the demand for parking will be removed, there will be no overall loss of parking supply resulting from these acquisitions. Therefore, this analysis excludes changes in off-street parking related to full parcel acquisitions.

¹⁹ For partial acquisitions that reduce off-street parking supply, the property acquisition process will determine whether a particular affected business will remain at its current location or whether the business will be relocated or displaced (i.e., due to inadequate parking supply to support that particular business and/or for some other reason). See Section 3.4 for additional information on the property acquisition process, including a listing of full and partial property acquisitions.

EXHIBIT 4.3-1
Parking Changes

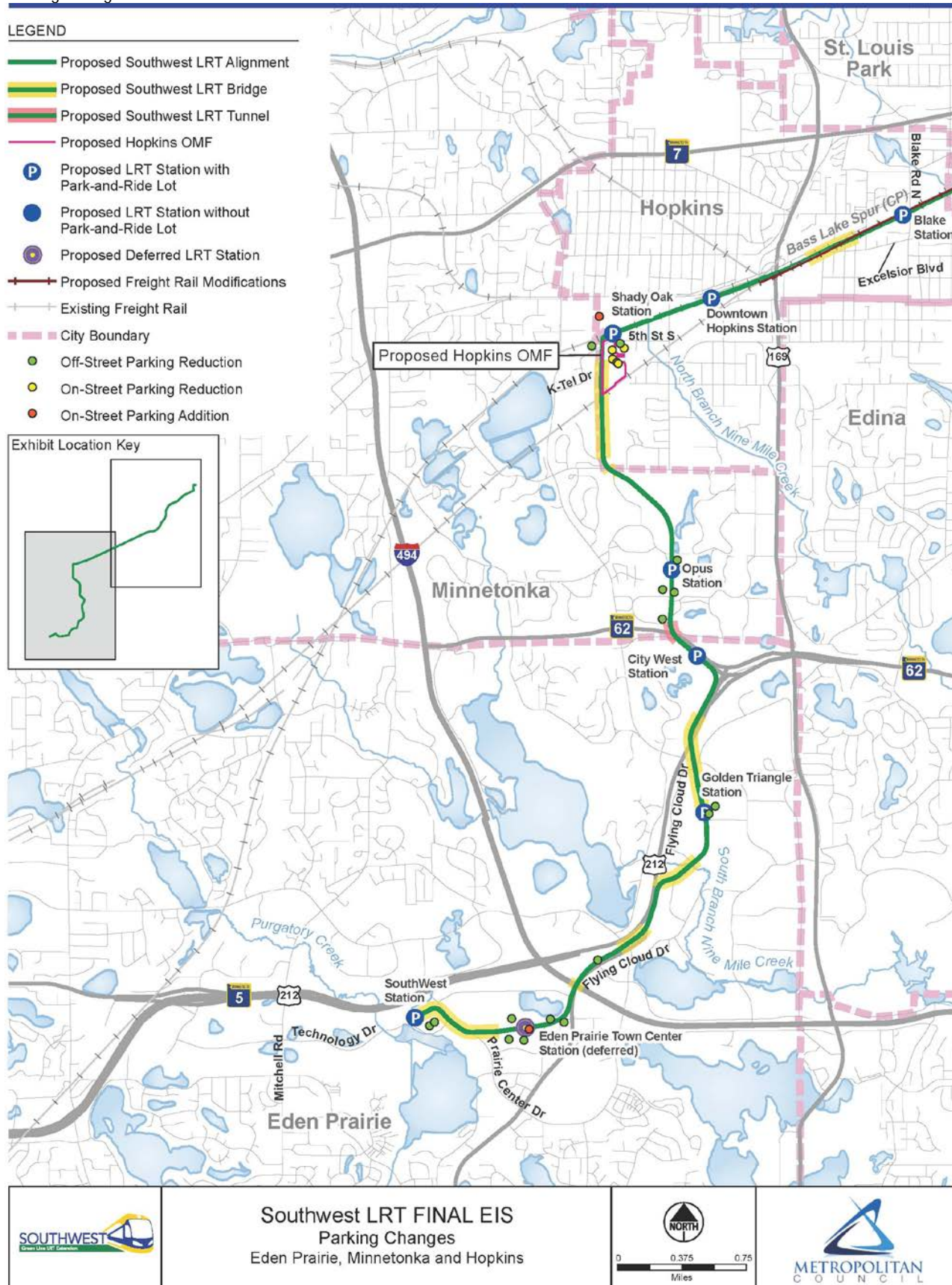
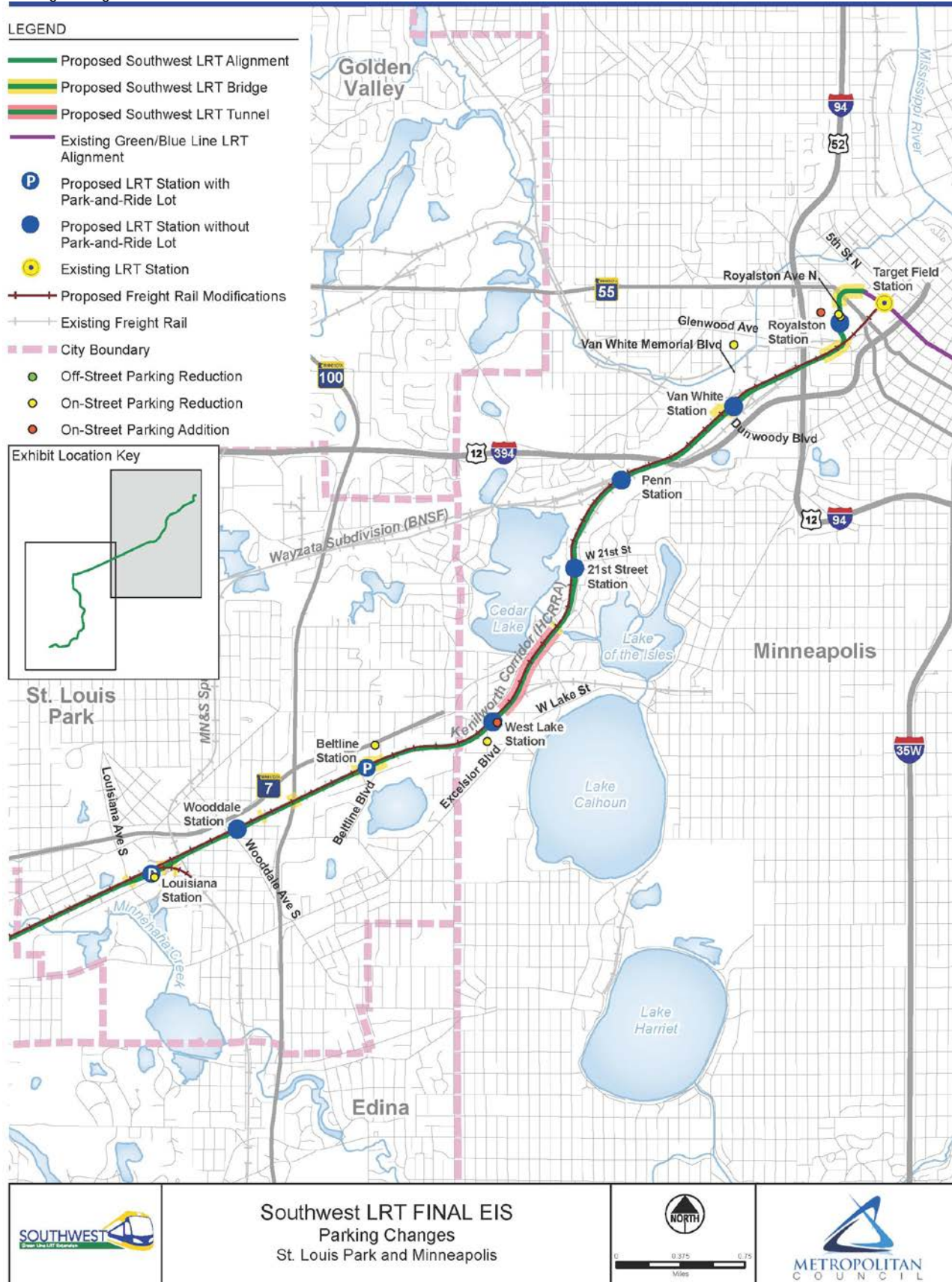


EXHIBIT 4.3-2
Parking Changes



The overall reduction in parking resulting from the Project will amount to a net loss of 692 off-street parking spaces, as follows:

- 18 spaces in the SouthWest Station area
- 131 spaces in the Eden Prairie Town Center Station area²⁰
- 3 spaces east of the Eden Prairie Town Center Station toward the proposed Golden Triangle Station
- 237 spaces in the Golden Triangle Station area
- 81 spaces in the area between the City West Station and the Opus Station
- 136 spaces in the Opus Station area
- 86 spaces in the Shady Oak Station area

The Project will also remove the existing publicly-owned parking lot (52 spaces) located at the southeast quadrant of the intersection between Excelsior Boulevard and 8th Avenue South, in Hopkins. This location serves as a Metro Transit Park-and-Ride Lot and provides parking for an existing trailhead location (i.e., public trail access location) for the existing Cedar Lake LRT Regional Trail.

On-Street Parking

As illustrated on Exhibits 4.3-1 and 4.3-2, the Project will have a long-term direct effect on the supply of on-street parking in the vicinity of the proposed light rail alignment, as it will increase or decrease the supply of on-street parking at select locations. In summary, the Project will add 98 on-street parking spaces at five locations (213 on-street spaces, if Eden Prairie Town Center Station is built by 2040) and eliminate 252 on-street parking spaces at nine locations, for an overall reduction in on-street parking supply of 154 spaces (reduction of 39 on-street spaces, if Eden Prairie Town Center Station is built by 2040).²¹ All of the locations where on-street parking will be reduced are on streets that currently serve commercial (e.g., office, retail) or industrial uses, with the exception of the Abbot Avenue/Chowen Avenue/West 32nd Street area near the proposed West Lake Station, which serves commercial and high-density residential uses.

Park-and-Ride Lots

As shown in Table 4.3-2, the Project will include new park-and-ride lots at nine light rail stations, for a combined addition of approximately 2,487 new park-and-ride spaces.

As described in Section 4.3.2, there is an existing publicly-owned park-and-ride lot located along Excelsior Boulevard at 8th Avenue South (southeast quadrant of the intersection), which is currently served by Metro Transit buses (route 670). This park-and-ride lot will be closed and replaced with a new park-and-ride lot constructed as part of the Project, in the northwest quadrant of the intersection between Excelsior Boulevard and 8th Avenue South, adjacent to the proposed Downtown Hopkins Station.

Based on the travel demand forecasts completed for the Project (see Section 4.1 for more detail), the cumulative supply of park-and-ride lot spaces will meet and exceed the forecasted demand for park-and-ride lot parking spaces in the Project's opening year (2020). However, the travel demand forecasts show a deficit of approximately 650 park-and-ride spaces in the Project's forecast year (2040). This forecast deficit is predominantly concentrated at the proposed SouthWest and Beltline Stations, with most (about two-thirds) of the deficit occurring at the SouthWest Station. Following is a description of the general land use and parking characteristics of each of these areas:

²⁰ As described in Section 2.1.1, the Eden Prairie Town Center Station and associated roadway improvements are deferred and are not expected to be in place when the Project opens in 2020. The station and associated roadway improvements are planned to be in place by 2040. If the station and associated roadway improvements are not in place by 2040, there would not be a reduction of 51 off-street parking spaces in the vicinity of the station by 2040, and thus the overall reduction in off-street parking supply resulting from the Project would be 561 spaces, rather than 641 spaces.

²¹ The Project will increase the supply of on-street parking at select locations (see Exhibits 4.3-1 and 4.3-2) as a result of changes to local roadway alignments or geometry needed to provide access to proposed light rail stations, which create more space for on-street parking.

TABLE 4.3-2
Planned Park-and-Ride Lots and Spaces under the Project

Proposed Light Rail Station	City	Number of New Spaces
SouthWest ^a	Eden Prairie	450
Eden Prairie Town Center	Eden Prairie	0
Golden Triangle	Eden Prairie	200
City West	Eden Prairie	160
Opus	Minnetonka	80
Shady Oak	Hopkins	700
Downtown Hopkins	Hopkins	190
Blake ^b	Hopkins	89
Louisiana	St. Louis Park	350
Wooddale	St. Louis Park	0
Beltline ^b	St. Louis Park	268
West Lake	Minneapolis	0
21st Street	Minneapolis	0
Penn	Minneapolis	0
Van White	Minneapolis	0
Royalston	Minneapolis	0
Total		2,487

^a Includes new parking spaces provided for Southwest LRT and not replacement parking.

^b Additional parking for joint development opportunity addressed in Chapter 9.

Source: Council, 2015.

- **SouthWest Station.** The area within the vicinity of SouthWest Station generally comprises office, retail, and open space land uses. Parking in this area is generally provided in off-street parking lots, and there is no on-street parking in the immediate vicinity of the station.
- **Beltline Station.** The area within the vicinity of Beltline Station is generally occupied by light industrial and commercial uses, with some residential land use (predominantly larger multifamily complexes) farther to the south and north of the station. Parking in this area is generally provided in off-street parking lots, and on-street parking is limited to the local streets north of Highway 25 and south of the station area along Park Glen Road.

4.3.3.2 Long-term Indirect Impacts on Parking

The Project could affect the supply of and demand for off-street parking in the areas surrounding the proposed new light rail stations as a result of station area development/redevelopment. Light rail lines can advance the timing and increase the intensity of development surrounding proposed station areas. Any development would be required to comply with the parking requirements of the local jurisdiction, which would tend to ensure a long-term balance of parking supply and demand.

The Project could also lead to indirect impacts related to “spillover” parking in neighborhoods adjacent to proposed light rail stations. Spillover parking is unwanted parking by light rail riders in off-street parking lots or at on-street parking spaces adjacent to a light rail station. Spillover parking can result from a lack of park-and-ride lot capacity relative to demand for park-and-ride lot spaces, and can affect both businesses and residences by limiting available parking spaces for residents, visitors, customers, and employees. Based on preliminary engineering, the Project will directly acquire parking from 15 commercial/retail businesses located along the alignment, and one mixed use residential property. The economic impact associated with this loss of parking is discussed in greater detail in Section 3.2 of this Final EIS.

Spillover parking could occur at stations where there are no park-and-ride lots planned or if there is a shortage of park-and-ride spaces along the light rail alignment or at a particular station. Because of the potential deficit in park-and-ride capacity in the forecast year near SouthWest and Beltline Stations (see Section 4.3.3.1), there is an increased risk for spillover parking to occur within the vicinity of the proposed SouthWest and Beltline Stations.

4.3.3.3 Short-term Impacts on Parking

Temporary removal of on-street parking spaces could occur at locations to facilitate construction of the Project (e.g., to facilitate truck movement, to provide a temporary truck loading zone). These potential temporary removals of on-street parking spaces will be identified as part of a construction staging plan, prior to construction. Refer to Section 3.2.3.3 for a discussion of short-term impacts to businesses resulting from construction of the Project, including temporary loss of parking.

4.3.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term parking impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Sections 4.3.3.1, 4.3.3.2, and 4.3.3.3 for additional information on the identified parking impacts and avoidance measures).

4.3.4.1 Mitigation Measures for Long-term Impacts

Impact. Loss of off-street parking spaces where buildings and businesses will remain.

Mitigation. The Council will compensate business owners for the loss of off-street parking spaces based on the terms of the purchase agreement between the Council and property owner, in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act). Refer to Section 3.4.1 for additional information on the Uniform Act.

Impact. Potential spillover parking in neighborhoods adjacent to proposed light rail stations, particularly in the areas within the vicinity of the proposed SouthWest and Beltline Stations.

Mitigation. The Council will complete a Regional Park-and-Ride System Report on an annual basis. As part of this effort, the Council and Metro Transit will collaborate with regional transit partners, local governments, and the Minnesota Department of Transportation to conduct an annual regional park-and-ride survey, which tracks facility use and emerging travel patterns by park-and-ride users across the region to identify the appropriate mitigation, as needed and where feasible. The results of this survey are published in the annual report.

Mitigation. The Council will develop a joint use agreement to share parking with SouthWest Transit for the park-and-ride lot adjacent to the station.

Impact. Potential displacement of on-street handicap parking spaces or on-street truck loading zones.

Mitigation. The Council will identify suitable replacement locations, prior to displacement of the parking spaces.

4.3.4.2 Mitigation Measures for Short-term Impacts

Impact. Temporary removal of on-street parking spaces at select locations throughout the parking study area to facilitate construction of the light rail improvement and associated roadway and freight rail modifications (e.g., to facilitate truck movement, to provide a temporary truck loading zone). Refer to Section 3.2.4 for a discussion of mitigation measures for short-term impacts to businesses resulting from construction of the Project, including temporary loss of parking.

Mitigation. The Council will develop a Construction Mitigation Plan that will address temporary parking loss during the construction of the Project. The Council will phase construction activities;

therefore, many of the spaces lost during construction will only be for a portion of the Project's construction phase.

4.4 Freight Rail

This section identifies the long-term direct and indirect and short-term (construction) direct and indirect impacts of the Project on freight rail (see Section 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis; a review of agency and railway coordination; an assessment of the existing built environment; a description of the anticipated impacts related to rail and truck freight facilities and operations; and a description of mitigation measures to implement with the Project.

4.4.1 Regulatory Context and Methodology

This section describes regulatory context and methodology for the freight analysis. This section includes a summary of relevant laws and executive orders, an overview of the methodology, and a description of the study area for the analyses completed as part of the land use evaluation.

The study area for the freight analysis included the area approximately one half-mile on either side of the proposed light rail alignment centerline. The focus of this evaluation is on freight rail lines in the freight study area.

To initiate the freight rail analysis in this Final EIS, the operators of freight rail in the freight study area were identified, along with all freight rail routes. All proposed physical changes to freight rail lines were identified and long-range direct and indirect impacts to freight operations were evaluated. Further, all existing at-grade freight rail/roadway crossings affected by the Project were identified, as well as any operational changes to freight rail. Long-term direct impacts include any changes to track or crossing controls and any changes to right-of-way which is currently used for freight rail purposes. Long-term indirect impacts include changes to freight travel times, access, and/or safety. See Section 3.2 for a discussion of economic effects related to freight rail.

4.4.2 Agency and Freight Rail Owner/Operator Coordination

This section describes the agency and railway coordination conducted for the Project. This section includes a summary of coordination undertaken with participating agencies, freight rail owners, and freight operators along the proposed light rail alignment.

4.4.2.1 Surface Transportation Board

As the Project's lead federal agency, FTA invited the federal Surface Transportation Board (STB) to be a Cooperating Agency, in accordance with Title 40 of the Code of Federal Regulations (40 CFR 1508.5). As documented in the Draft EIS, the STB agreed to become a Cooperating Agency in August 2012 because several alternatives under evaluation at the time would have required STB approval to be implemented. Subsequent to the publication of the Draft EIS, the Project definition changed (see Section 2.1.1) and the proposed freight rail modifications incorporated into the Project can be implemented without STB approval. As such, FTA and the STB agreed that STB would participate in the Project's NEPA process as a Participating Agency rather than a Cooperating Agency. (See Appendix N, Agency Coordination Letters, for documentation related to the agency's status.)

4.4.2.2 Federal Railroad Administration

The FRA is the federal agency with jurisdictional authority over railroad safety, except "rapid transit operations in an urban area that are not connected to the general railroad system of transportation" (49 U.S.C. § 103, 49 U.S.C. § 20102). In October 2014, FRA provided a preliminary jurisdiction determination for the proposed Project which concluded that the proposed Southwest LRT Project will be an urban rapid transit (URT) operation, and therefore, FRA will not exercise its safety jurisdiction over the Southwest LRT Project, except to the extent that it is necessary to ensure railroad safety at any limited shared connections between the Southwest LRT Project and freight rail. This applies to the shared at-grade light rail/freight rail roadway crossings included in the Project (see Section 4.6.2). The Project will be subject to FRA regulations,

including 49 CFR Parts 214, 219, 220, 222, 225, 228, 233, 234, 235, and 236 and 49 CFR §229.125, as well as the hours of service laws, but only at the points of connection between the Southwest LRT Project and the general railroad system. See Appendix N for a copy of correspondence between the Council and FRA regarding FRA's jurisdictional determination.

4.4.2.3 Hennepin County Regional Railroad Authority

HCRRA is the current owner of the Kenilworth Corridor (see Exhibit 4.4-1). Future long-term ownership of the Kenilworth Corridor has not been determined and will be decided as a result of negotiations between the Council and HCRRA, prior to construction of the Project.²² As part of these negotiations, TC&W's operating rights within the Kenilworth Corridor will be maintained per the terms of the existing trackage rights agreement.²³ See Appendix N for a summary of correspondence between the Council and HCRRA regarding long-term ownership of the Kenilworth Corridor.

4.4.2.4 Freight Rail Owners and Operators

The Council has and will continue to coordinate with freight rail owners and operators affected by the Project. Following is a summary of relevant coordination efforts:

- **Canadian Pacific Railway.** Canadian Pacific Railway (CP Railway) is the owner of the 6.8-mile Bass Lake Spur freight railroad (see Exhibit 4.4-1). As part of the Project, the Council intends to purchase all of the 6.8-mile Bass Lake Spur from CP Railway. See Appendix N for the relevant correspondence with CP Railway regarding the purchase of the Bass Lake Spur.²⁴
- **BNSF Railway.** BNSF Railway is the owner of the Wayzata Subdivision (see Exhibit 4.4-1). As part of the Project, the Council intends to acquire a permanent easement of approximately 1.5 acres of land owned by BNSF Railway. See Appendix N for a summary of correspondence between the Council and BNSF regarding the purchase of an easement in the Wayzata Subdivision.
- **Twin Cities & Western Railroad.** TC&W operates freight trains in the Bass Lake Spur, Kenilworth Corridor, and the Wayzata Subdivision. TC&W's operating rights within the Kenilworth Corridor will be maintained per the terms of the existing trackage rights agreement, and TC&W will be granted operating rights within the Bass Lake Spur as part of the purchase agreement between the Council and CP Railway. See Appendix N for a summary of correspondence between the Council and TC&W.

4.4.3 Affected Environment

This section describes the existing environment conditions for freight rail within the study area. As shown in Exhibit 4.4-1, there are currently four active freight rail lines within the freight study area: the Bass Lake Spur; the Kenilworth Corridor; a short segment of Wayzata Subdivision; and the Minneapolis, Northfield, and Southern Railway (MN&S) Spur. Trains make the connection between the MN&S Spur and the Bass Lake Spur using the existing Skunk Hollow switching wye. Table 4.4-1 includes a summary of the existing characteristics of the four freight rail lines. Freight rail operations can change in the future, depending on factors such as market conditions and operational adjustments that are at the discretion of the freight rail owners and operators. Refer to Section 4.6 (see Table 4.6-1) for a description of existing at-grade freight rail crossings of roadways and trails in the study area.

²² The Council will take all reasonable actions to keep the Kenilworth Corridor in public ownership while it is being used for rail transportation of any kind, per the terms of the Memorandum of Understanding between the Council and the City of Minneapolis (2014; refer to Appendix D).

²³ Source: Trackage Rights Agreement Between Soo Line Railroad Company, TC&W Railroad Company, and Hennepin County Regional Railroad Authority, August 3, 1998, and supplemented July 30, 2002. This agreement grants TC&W Railroad Company non-exclusive rights to conduct railroad operations within the Kenilworth Corridor, including the operation of freight trains, occasional passenger trains, locomotives, cabooses, rail cars, maintenance-of-way equipment, and other rail equipment.

²⁴ The purchase agreement between the Council and CP Railway for the acquisition of the Bass Lake Spur will be negotiated and executed after the publication of the Project's Record of Decision.

EXHIBIT 4.4-1

Existing Freight Rail Operations

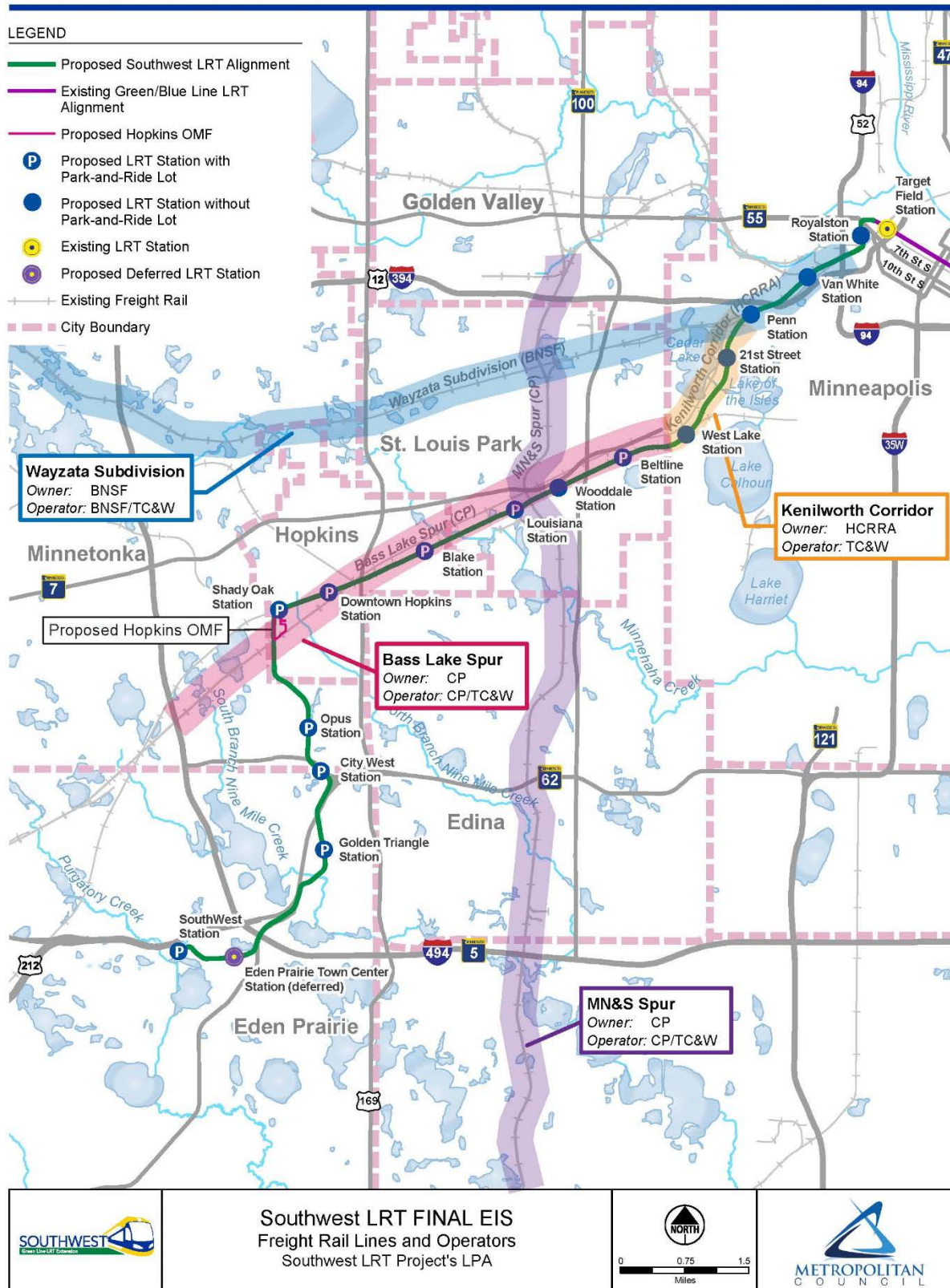


TABLE 4.4-1

Existing Freight Rail Operating Conditions in the Wayzata Subdivision, Kenilworth Corridor, Bass Lake, and MN&S Spurs^a

Freight Rail Characteristic	Wayzata Subdivision	Kenilworth Corridor	Bass Lake Spur	MN&S Spur
Current Owner	BNSF	HCRRA	CP	CP
Freight Rail Operator	BNSF/TC&W	TC&W	CP/TC&W	CP/TC&W
Maximum Design Speed	25 mph	25 mph	25 mph	10 mph
Maximum Operating Speed	25 mph	10 mph	25 mph	10 mph
10-25 Car Trains per Week	0	0	0	10 (CP Railway)
65-75 Car Trains per Week	14 (TC&W)	14 (TC&W)	14 (TC&W)	0
80-125 Car Trains per Week	91 (TC&W and BNSF)	5-6 (TC&W)	5-6 (TC&W)	0
Typical Commodities Carried	Wide variety	Agra-goods, grain, coal, ethanol	Agra-goods, grain, coal, ethanol	Local Services

^a Refer to Exhibit 4.4-1 for a map showing the location of the Kenilworth Corridor, Bass Lake Spur, MN&S Spur, and Wayzata Subdivision.

Source: TC&W/CP Railway, 2013. BNSF Railway, 2013

4.4.4 Environmental Consequences

This section identifies the long-term and short-term (construction) direct and indirect freight rail impacts that will result from the Project. Direct freight rail impacts are defined as physical changes to the trackage itself, such as track realignment, relocation, reconstruction, or removal. See Section 3.2.3.1 for a discussion on economic impacts to freight rail operations. Long-term indirect impacts on freight rail considered include the potential changes in operation related to ownership and operational agreements, as well as changes in operation related to market expansion.

4.4.4.1 Long-term Direct Impacts on Freight Rail

As part of the Project, changes to existing freight rail infrastructure will be required within the Bass Lake Spur, Kenilworth Corridor, and the Wayzata Subdivision. Table 4.4-2 summarizes the proposed freight rail modifications. A more detailed description of proposed freight rail modifications is included in Section 2.1.1.3. Preliminary Engineering Plans showing the proposed changes to freight rail infrastructure are included in Appendix E.²⁵ Refer to Section 4.6 (see Table 4.6-1) for a description of existing at-grade freight rail crossings of roadways and trails in the study area.

Additional information on freight rail is included in multiple locations within this Final EIS, as follows: Section 3.2, economic effects on freight rail operations; Section 3.4, right-of-way impacts on freight rail corridors; Section 3.12, noise impacts and mitigation measures related to freight rail; and Section 4.6, railroad crossing safety measures.

4.4.4.2 Long-term Indirect Impacts on Freight Rail

While the Project will require freight rail track modifications, these modifications will not substantially alter operations and will not open access to new freight rail markets. However, with the elimination of the northern branch of the existing Skunk Hollow switching wye and replacement with a new Southerly Connector (see Exhibit 2.1-5) to accommodate the light rail alignment, the proposed Louisiana station will likely reduce freight rail travel times for switching movements between the Bass Lake Spur and the MN&S Spur. As a result of these freight rail modifications, the Project could contribute indirectly to increases in the frequency and/or length of freight trains traveling along the MN&S Spur, which could result in indirect adverse impacts on the human environment, which could be significant.

Future freight rail operations are subject to a range of market forces and are dependent on the business plans of freight railroad operators, both of which are outside of the jurisdiction of the FTA and the Council. Pursuant to 40 CFR 1502.22 and Minnesota Statute 4410.2500, the Final EIS does not evaluate potential

²⁵ Refer to Section 2.2 for a description of alternatives previously considered and the design adjustment process.

adverse effects on the human environment related to the potential indirect impact of increased freight rail frequency and/or length for the following reasons:

1. In order to evaluate this potential impact, the Council and FTA would need information related to freight rail market analysis in the area and operational plans, which are proprietary information that are subject to change based on a number of factors that are unknown and unavailable. FTA and the Council cannot compel the freight rail operators to disclose their business plans for future service.
2. In order to evaluate reasonably foreseeable impacts, FTA and the Council would need access to private market analysis information for freight operators in the region, and short- and long-term business plans for the railroads. Such information is protected under Title 49, Subtitle IV, Part A of U.S. Code.
3. There is no existing credible scientific evidence or data which can be used to evaluate the potential for related adverse impacts on the human environment related to future market demands placed on freight rail cargo in the Project's study area, or the operational efficiencies that the railroads would accrue with the new wye. Operational efficiencies are dependent on many factors, such as technology, infrastructure quality and asset quality.
4. The FTA and the Council are aware of no theoretical approaches or research methods generally accepted in the scientific community to derive the information required for this analysis without the cooperation of the freight rail operators in sharing the proprietary information.

As demonstrated in Table 4.4-2, no long-term indirect impacts on freight rail related to other aspects of the Project (excluding the Southerly Connector as described above) are anticipated.

4.4.4.3 Short-term Impacts on Freight Rail

A number of short-term impacts to freight rail operations will result from construction activities along the three freight rail corridors adjacent to the Project. These impacts are described in Table 4.4-3. Refer to Section 2.1.1.2 for a more detailed description of construction activities related to the Project.

In order to minimize the potential for freight rail disruption, the Council, in coordination with the affected freight railroad owners and operators, will develop specifications for the contractor to follow in developing and implementing construction staging and sequencing plans. The plan will facilitate coordination between the Project and the affected freight railroad owners and operators during construction activities affecting freight railroad operations to help ensure the Project does not create unreasonable constraints during construction. See Section 4.4.5.2-A for additional information on mitigation measures for short-term (construction) impacts to freight rail.

4.4.5 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term impacts on freight transportation. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Sections 4.4.4.1, 4.4.4.2, and 4.4.4.3 for additional information on the identified freight rail impacts and avoidance measures).

4.4.5.1 Long-term Mitigation Measures

No mitigation measures are warranted for long-term impacts to freight rail because there will be no adverse impacts due to the effectiveness of identified avoidance measures.

Additional information on mitigation measures for long-term impacts to other environmental resources associated with freight rail are included, as follows: Section 3.2, economic impacts on freight rail operations; Section 3.4, acquisition of railroad right-of-way; Section 3.12, noise impacts, including train horn quiet zones; and Section 4.6, safety related to light rail operation within the vicinity of freight rail operation and railroad crossing safety measures.

TABLE 4.4-2

Long-term Changes to Freight Rail Infrastructure^a

Freight Rail Corridor	Freight Rail Modification	General Location	Description of Changes
Bass Lake Spur	Freight rail/light rail swap	East of Excelsior Blvd to east of Beltline Station	<u>Physical Changes</u> Shift freight rail mainline approximately 45 feet north. Light rail alignment will be located south of the freight rail, generally on what is now CP Railway right-of-way. Cedar Lake LRT Regional Trail will be relocated north of its current location, within the HCCRA owned right-of-way (see Exhibit 2.1-5) <u>Operational Changes</u> None
	Southerly Connector/Skunk Hollow switching wye	Intersection of Bass Lake Spur and MN&S Spur	<u>Physical Changes</u> Eliminate the northern branch of the existing Skunk Hollow switching wye and replacement with a new Southerly Connector (see Exhibit 2.1-5) <u>Operational Changes</u> Provides TC&W trains continued access between the Bass Lake Spur eastbound to the southbound MN&S Spur and the reverse Improves freight rail travel times, making the movement more efficient for trains that make this connection. This will not change access to existing freight rail markets or open access to new freight rail markets, but could contribute indirectly to increases in the frequency/length of freight trains traveling along the MN&S Spur to the south of the Southerly Connector, depending on the business plan of freight rail operators
	Siding track removal	West of Excelsior Blvd to east of Beltline Blvd	<u>Physical Changes</u> Remove approximately 11,770 feet of freight rail siding track <u>Operational Changes</u> Eliminates the bi-directional maneuvering and parking of TC&W freight trains in siding areas at the Wooddale Ave and Bass Lake Spur freight rail crossing that occurs under existing conditions
	Freight Rail Bridge Reconstruction ^b	Intersection of Bass Lake Spur with Minnehaha Creek and Louisiana Ave	<u>Physical Changes</u> Reconstruction of existing freight rail bridges at Minnehaha Creek and Louisiana Ave <u>Operational Changes</u> None
Kenilworth Corridor	Freight rail reconstruction	East of Beltline Blvd to West of Cedar Lake Pkwy	<u>Physical Changes</u> Minor adjustments to and reconstruction of the freight tracks <u>Operational Changes</u> None
	Freight rail reconstruction	North of Cedar Lake Pkwy to south of Burnham Rd	<u>Physical Changes</u> Existing freight tracks will be moved approx. 40 feet north to accommodate light rail alignment <u>Operational Changes</u> None
	Freight Rail Bridge Reconstruction	Kenilworth Corridor/Kenilworth Lagoon Crossing	<u>Physical Changes</u> Reconstruction of existing freight rail bridge at the Kenilworth Lagoon crossing <u>Operational Changes</u> None
Wayzata Subdivision	Freight rail reconstruction	Wayzata Subdivision/west of the I-94 bridge and east of Royalston Avenue	<u>Physical Changes</u> Shift an approximately 3,560-foot section of the BNSF mainline up to 25 feet north to accommodate light rail alignment <u>Operational Changes</u> None

^a See Appendix E for preliminary engineering drawings showing the proposed changes.^b The existing Bass Lake Spur bridge over Highway 100 is being reconstructed as part of a separate MnDOT project. The Southwest LRT Project will construct a new light rail bridge over Highway 100.

Source: Council, 2015.

TABLE 4.4-3

Short-term Impacts on Freight Rail

Freight Rail Corridor	Short-term (Construction) Impacts ^a
Bass Lake Spur	Multiple 8- to 10-hour stoppages for track shifts moving existing railroad operations to the proposed alignment One 24- to 36-hour stoppage to shift the bridge over Highway 100 from its location along the current alignment to a location north of the light rail mainline; it is anticipated that this will be performed over a long weekend.
MN&S Spur	One 8- to 10-hour stoppage for construction of the new Southerly Connector
Kenilworth Corridor	Multiple 8- to 10-hour stoppages for track shifts moving existing railroad operations to the proposed alignment One 18-hour stoppage at Cedar Lake Parkway for freight rail crossing modifications One 18 hour stoppage at 21st street for shared LRT and freight rail crossing modifications
Wayzata Subdivision	Multiple 8- to 10-hour stoppage in the vicinity of I-94 and Royalston Avenue during the completion of the freight rail shift One 18-hour stoppage in the vicinity of Royalston Station to allow for construction of LRT bridge over the freight rail alignment

^a Freight rail stoppage locations and durations may be refined based on consultation with freight rail operators, as appropriate.

Source: Council, 2015.

4.4.5.2 Short-term Mitigation Measures

Impact. Short-term impacts to freight rail operations resulting from construction activities along the three freight rail corridors adjacent to the Project.

Mitigation. In order to mitigate short-term impacts to freight rail operations related to construction activities, the Council will develop and implement freight rail operation coordination plans. The purpose of these plans is to facilitate coordination between the Project and the affected freight railroads during construction activities affecting freight rail operations. As part of this effort, Council staff will also work with affected freight rail owners and operators to provide provisions in the construction contract to identify how the contractor will interact with the railroads. Further, Council staff will work with affected freight rail owners and operators to sequence construction to minimize effects on freight movements and to identify optimal periods for closing the rail service and reducing speeds. Dates and times for all stoppages will be determined through coordination with the railroad owners and operators.

During construction activities, flaggers will be used to allow freight rail operations to continue. The use of flaggers will require construction activities adjacent to active freight rail to halt while freight trains traverse the construction area.

4.5 Pedestrian and Bicycle

This section describes the long-term direct and indirect and short-term (construction) direct and indirect effects of the Project²⁶ on pedestrian and bicycle transportation in the corridor (see Section 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis; an assessment of existing pedestrian and bicycle facilities; a description of the anticipated impacts related to pedestrian and bicycle facilities; and a description of mitigation measures to implement with the Project.

4.5.1 Regulatory Context and Methodology

The study areas for the pedestrian and bicycle facilities evaluation include a 1/2-mile radius around the center point of proposed light rail stations for pedestrian facilities and a one-mile radius for bicycle facilities,

²⁶ The Project includes all pedestrian and bicycle improvements included in the Memorandum of Understanding between the Metropolitan Council and the City of Minneapolis. Instructions on how to access this document (Metropolitan Council and City of Minneapolis (Council and City). 2014. *Proposed Redesign of a Portion of Southwest Light Rail Project*. Memorandum of Understanding) can be found in Appendix D.

based on industry standards.²⁷ All of the public trails assessed in this analysis (aside from the Opus development trail network) are located within a transportation right-of-way—either HCRRA-owned right-of-way or a roadway right-of-way—and as such are not eligible for protection under Section 4(f); the Section 4(f) assessment of the Opus development area trail network is provided in Section 6.7.1.4 of this Final EIS.

Existing sidewalks, trails, on-street bike lanes, and marked crossings²⁸ within the pedestrian and bicycle study areas were identified using geographic information system (GIS) data, aerial photography, and field review. For the purposes of this analysis, these facilities are defined as follows:

- **Sidewalks.** Linear features for pedestrian travel along the roadway. Generally at least five feet wide and typically paved with concrete.
- **Trails.** Linear features for pedestrian or bicycle travel, either along the roadway or in an exclusive right-of-way. Generally at least eight feet wide and typically paved with asphalt (unless otherwise noted in the analysis). Trails may have shared or separated spaces for pedestrians and bicyclists.
- **On-street bike lanes.** Marked linear features for bicycle travel on the roadway.
- **Marked Crossings.** Signalized and unsignalized marked crosswalks at roadway intersections or mid-block locations. These also include trail crossings of railroad tracks and roadways.

Long-term direct and indirect impacts to the pedestrian and bicycle environment were evaluated based on a review of the Project's Preliminary Engineering Plans (see Appendix E) and the *Metro Light Rail Transit Design Criteria* (Council, 2015b). The design criteria indicate the Project's conformance with other manuals, standards, and engineering best practices, including national and local guidelines that are relevant to pedestrian and bicycle design.

For the Kenilworth Trail, where the Project will result in a reduced trail width, *Shared-Use Path Level of Service (LOS) Calculator: A User's Guide* (FHWA, 2006) was used to determine the level of effect the Project would have on bicycle and pedestrian travel on that trail. *Shared-Use Path LOS* was calculated using a spreadsheet that applies the FHWA methodology to analyze shared-use paths based on their width and travel mode splits (e.g., biking, walking, rollerblading).²⁹ All other trails affected by the Project will be rebuilt to their current width, so *Shared-Use Path LOS* did not need to be calculated.

4.5.2 Affected Environment

There are numerous existing bicycle and pedestrian facilities within the Southwest LRT corridor. This section describes the following: the existing pedestrian and bicycle facilities in the respective study areas; land use context; pedestrian and bicycle volumes on select facilities; and the accessibility of the proposed light rail stations relative to the existing pedestrian and bicycle networks (see Table 4.5-1). This section includes an evaluation of existing sidewalks, trails, on-street bike lanes, and marked crossings (see Section 4.5.1 for definitions of these facilities). The presence, design, and condition of these facilities varies throughout the pedestrian and bicycle study areas, depending on development patterns, community policies,

²⁷ The Draft EIS methodology used pedestrian and bicycle counts for regional trails within the limits of disturbance. The revised methodology expands the study area to ½ mile for walking and one mile for bicycling and includes all pedestrian and bicycle facility types. The pedestrian study area was chosen because FTA New Starts/Small Starts applications consider a ½-mile area around a station, and pedestrians are typically willing to walk ½ mile to access transit services. The state of the bicycle network within one mile of a station is a key consideration for bicyclists' willingness and ability to access transit services.

²⁸ Pedestrians and bicycle users are legally allowed to use facilities that are not designated specifically for their use. For example, at intersections with no marked crossings, vehicle drivers must stop and yield the right-of-way to pedestrians crossing the roadway. Typically, pedestrians are also allowed to cross roadways between intersections, but must yield the right-of-way to all vehicles on the roadway. In locations where there are no trails or on-street bike lanes present, bicycle users are generally permitted to share the roadway with motor vehicles, unless explicitly prohibited. See Section 4.2 for a discussion of the impacts of the Project on roadways.

²⁹ FHWA. 2006. *Shared-use Path Level of Service Calculator-A User's Guide*.

TABLE 4.5-1

Pedestrian and Bicycle Facilities, Station Access, and Usage Counts by Light Rail Station Area

Light Rail Station Area	Pedestrian and Bicycle Facilities and Access (by pedestrian and bicycle study areas)	Usage Count Location ^a	2-hour Count ^a		Count Source ^a
			Bicycle	Pedestrian	
SouthWest Station	<p><i>Pedestrian study area:</i> This area is comprised of retail, residential, and open space land uses. Retail land uses are oriented around the existing SouthWest Transit park-and-ride parking structure. Sidewalks and trails are present on at least one side of all roads within the study area. The trail and sidewalk along Technology Dr provide the primary access to the area from the east and west. Trail connections along the south side of Technology Dr also provide access to open space areas in the southern portion of the pedestrian study area. Sidewalks on the Prairie Center Dr bridge over US 212 provide limited connectivity to the north. Prairie Center Dr provides a connection across US 212. There are five signalized intersections with at least one pedestrian crosswalk along Prairie Center Dr and Technology Dr. There is an unsignalized marked crossing on Technology Dr, located midway between Mitchell Rd and Prairie Center Dr.</p> <p><i>Bicycle study area:</i> There are trails on at least one side of major roadways. The Purgatory Creek Park trail is a 3-mile loop and passes within 1 mile of the proposed station. In addition, an unnamed paved asphalt trail parallels the north side of US 212 and provides bicycle- and pedestrian-specific access through the bicycle study area. Similar to pedestrian access, the trail along the north side of Technology Dr provides the primary bicycle access to the station from the east and west. Trail connections along the south side of Technology Dr provide access to residential land uses to the south by way of the network of open-space trails along Purgatory Creek and neighborhood roadways.</p> <p>The Prairie Center Dr overpass of US 212, northeast of the proposed station provides the only trail crossing of US 212. There are signalized, marked crossings at each end of the bridge. North of US 212, a network of trails provides access to office, commercial and residential land uses. However, the network is often discontinuous through office and commercial areas, and there are many locations where trails connect to sidewalks instead of other trails.</p>	No data	N/A	N/A	N/A
Eden Prairie Town Center Station	<p><i>Pedestrian study area:</i> This area includes suburban office, retail, and some multi-family residential land use. Sidewalks are currently present on both sides of Singletree Ln, Eden Rd, and Glen Ln. There is also a trail on one side of Technology Dr. There are nine signalized intersections with at least one pedestrian crosswalk along Prairie Center Dr and Flying Cloud Dr. There is a lack of connectivity between the proposed station and Technology Dr that limits direct pedestrian access to the north. Pedestrians must use a circuitous route to access businesses along Technology Dr north and west of the station. Further north, US 212 and I-494 are barriers to pedestrian connectivity north of the station. The only pedestrian crossing over I-494 is on Flying Cloud Dr.</p> <p><i>Bicycle study area:</i> There are trails on at least one side of major roadways. The trail connections constructed along the station entrance road will also provide bicycle access to the proposed station from the east and connect to an existing trail network south and east of the station. There is no direct bicycle access to the proposed station from the north, south, or west. US 212 and I-494 are barriers to bicycle connectivity north of the station. The trail on Prairie Center Dr provides access across US 212 including signalized marked crossings at each end of the bridge. A barrier-separated trail crossing is provided on the Flying Cloud Dr overpass over I-494 northeast of the proposed station, with a signalized, marked crossing at the south end of the bridge. Once across I-494, the trail continues to the east, but does not connect to the office and commercial land uses along Flying Cloud Dr. An unnamed paved asphalt trail parallels the north side of US 212 and provides bicycle- and pedestrian-specific access from Prairie Center Dr to the west.</p>	No data	N/A	N/A	N/A
Golden Triangle Station	<p><i>Pedestrian study area:</i> Low-rise, low-density office and light-industrial land uses within the area are served by a network of roadways that do not include sidewalks or pedestrian crossings. There are four signalized intersections with at least one pedestrian crossing along Shady Oak Rd and one unsignalized pedestrian crossing on Flying Cloud Dr. There is a trail on Flying Cloud Dr which provides limited connectivity to the west side of the pedestrian study area, primarily through open space areas. US 212 is a barrier to east-west travel in the study area, and can only be crossed on Shady Oak Rd. Currently, signage at the interchange indicates that pedestrian crossings are prohibited in every direction. However, the interchange is being reconstructed by Eden Prairie (opens in 2016) and will include a sidewalk and trail that cross US 212. The</p>	No data	N/A	N/A	N/A

Light Rail Station Area	Pedestrian and Bicycle Facilities and Access (by pedestrian and bicycle study areas)	Usage Count Location ^a	2-hour Count ^a		Count Source ^a
			Bicycle	Pedestrian	
	<p>lack of pedestrian infrastructure within the pedestrian study area makes pedestrian access to the proposed station difficult.</p> <p><i>Bicycle study area:</i> There are trails on Valley View Rd, Flying Cloud Dr, Shady Oak Dr, and Bryant Lake Dr that provide access for bicyclists to businesses and residential land uses on the west side of the bicycle study area. However, bicyclists must share the roadway with motor vehicles in order to access businesses on the east side of the study area. The limited access highways surrounding the site are a barrier to bike access from the north, east, and west.</p>				
City West Station	<p><i>Pedestrian study area:</i> This area includes suburban office, retail, and some multi-family residential land use. There are very few sidewalks, trails, or existing signalized crossings. There are two signalized intersections with at least one pedestrian crosswalk on Shady Oak Rd. There are five unsignalized marked crossings on West 62nd St, Optum Way, City West Pkwy and Blue Circle Dr. There is no pedestrian access to the proposed station from the north and east due to the Hwy 62 and US 212 interchange. A trail connection currently under construction on West 62nd St is expected to provide access from the west.</p> <p><i>Bicycle study area:</i> There are trails along one side of Flying Cloud Dr, Bryant Lake Dr, and Old Shady Oak Rd. In addition, there is a trail system that extends from Hwy 61 eastward to a point where it passes underneath Bren Rd E, then continues northward and runs adjacent to the Opus Creek Station, passes underneath Bren Rd W, then continues northward into the Opus Woods office park area. This trail system connects various office buildings and tends to have grade-separated crossings at the one-way circulator roads (e.g., Bren Rd E and Bren Rd W). The trail system has limited connectivity to the larger transportation system outside the development. This network of trails provides pedestrian access between the station and the surrounding office and retail land uses. These trails connect various office buildings and tend to have grade-separated crossings at the one-way circulator roads (e.g., Bren Rd E and Bren Rd W). The trails have limited connectivity to the larger transportation system outside the office park. There is no bicycle access to the proposed station from the north and east due to the Hwy 62 and US 212 interchange.</p>	No data	N/A	N/A	N/A
Opus Station	<p><i>Pedestrian study area:</i> There are currently sidewalks along one or both sides of W 62nd St, Shady Oak Rd, and Bren Rd. There are two signalized intersections with at least one pedestrian crosswalk along Shady Oak Rd and two unsignalized pedestrian crossings on West 62nd St and Blue Circle Dr.</p> <p>There is a trail system that extends from Hwy 61 eastward to a point where it passes underneath Bren Rd E, then continues northward and runs adjacent to the Opus Creek Station, passes underneath Bren Rd W, then continues northward into the Opus Woods office park area. These trails connect various office buildings and tend to have grade-separated crossings at the one-way circulator roads (e.g., Bren Rd E and Bren Rd W). The trail system has limited connectivity to the larger transportation system outside the development. This network of trails provides pedestrian access between the station and the surrounding office and retail land uses.</p> <p><i>Bicycle study area:</i> The same network of trails will provide bicycle access between the station and surrounding office and retail land uses. Outside the immediate vicinity of the station, the trail network provides connectivity to office/commercial and residential land uses located between the station and US 169. Bren Rd E includes a grade-separated crossing over US 169 with signalized marked crossings at each end of the bridge. The trail terminates immediately east of US 169, and does not provide connectivity to residential land uses east of US 169. A portion of the Nine Mile Creek Regional Trail is located northeast of the station. There is a trail present along one side of Shady Oak Rd, and an unnamed asphalt trail provides bicycle- and pedestrian-specific access west from Shady Oak Rd through Lone Lake Park.</p>	No data	N/A	N/A	N/A
Shady Oak Station	<p><i>Pedestrian study area:</i> Much of the land use within the pedestrian study area is low-rise, low-density office/light industrial, and connectivity is limited. Sidewalks are present along some, but not all roadways. On Excelsior Blvd, there is a sidewalk on one side and a trail on the other. Roadways such as 17th Ave S and 5th St S have sidewalks on one side. There are three signalized intersections with at least one pedestrian</p>	11th Ave/Cedar Lake LRT Regional Trail	357	19	TRPD, Sunday, Aug 14, 2011

Light Rail Station Area	Pedestrian and Bicycle Facilities and Access (by pedestrian and bicycle study areas)	Usage Count Location ^a	2-hour Count ^a		Count Source ^a
			Bicycle	Pedestrian	
	<p>crosswalk along Excelsior Blvd. There are many unsignalized, marked pedestrian crossings in the north section of the study area. There are no sidewalks on 15th Ave S and 16th Ave S. Pedestrians can access the proposed station from the west using the Minnesota River Bluffs Regional Trail and the east from the Cedar Lake LRT Regional Trail. The existing trail is grade-separated from Shady Oak Rd west of the station. 17th Ave S will be extended between Excelsior Blvd and the station to provide access from the north. The Project also includes a pedestrian connection to the existing sidewalk system along 5th Ave. S. and the proposed Hopkins OMF.</p> <p><i>Bicycle study area:</i> There are trails along one side of Excelsior Blvd, Shady Oak Dr and 11th Ave. In addition, the Minnesota River Bluffs/Cedar Lake LRT Regional Trails provide east-west bicycle- and pedestrian-specific access through the middle of the bicycle study area. The Lake Minnetonka LRT Regional Trail connects to Excelsior Blvd from the northwest via 8th Ave S, and a portion of the Nine Mile Creek Regional Trail is located southwest of the station, but does not connect to the trail on 11th Ave. Bicycle access within the immediate vicinity of the proposed station is the same as pedestrian access. There is a limited trail network at Shady Oak Beach Park at the far southern portion of the bicycle study area that provides access across Shady Oak Lake and connections to some neighborhoods to the south.</p>	17th Ave/Lake Minnetonka LRT Regional Trail	18	34	TRPD; Wednesday, June 20, 2012
		Hwy 7/Lake Minnetonka LRT Regional Trail	80	4	TRPD, Saturday, May 29, 2010
		11th Ave/Lake Minnetonka LRT Regional Trail	106	9	TRPD; Thursday, June 3, 2010
Downtown Hopkins Station	<p><i>Pedestrian study area:</i> Much of the land use immediately south of the proposed station area is low-rise, low-density office/light industrial, and pedestrian connectivity to the station is limited. Sidewalks are present on both sides of most roadways, except for in the residential neighborhoods in the south of the study area. There are many signalized intersections with at least one pedestrian crosswalk along Excelsior Blvd and Main St. Additionally, there are many marked crosswalks at unsignalized intersections north of the station. Existing railroad tracks and Hopkins Honda site immediately south of the light rail alignment further limit access south of the station. The Cedar Lake LRT Regional Trail provides pedestrian access to the Downtown Hopkins Station from the east and west. From the north, pedestrians will access the station on an extension of 8th Ave S which connects to the existing sidewalk network along Excelsior Blvd and to the north. US 169 is a barrier for east-west travel to the proposed LRT station. The Minnesota River Bluffs Regional Trail and the sidewalk along Excelsior Blvd provide the only crossings.</p> <p><i>Bicycle study area:</i> There are trails along Shady Oak Dr, 11th Ave, and a portion of Excelsior Blvd (i.e., from Blake Rd to Shady Oak Dr). The Cedar Lake LRT Regional Trail provides east-west bicycle- and pedestrian-specific access through the middle of the bicycle study area including a grade-separated crossing of US 169. Additionally, the Lake Minnetonka LRT Regional Trail connects to Excelsior Blvd from the northwest via 8th Ave S, and a portion of the Nine Mile Creek Regional Trail is located southwest of the station, but does not connect to the trail on 11th Ave. Bicycle access within the immediate vicinity of the Downtown Hopkins Station is the same as pedestrian access. The Cedar Lake LRT Regional Trail connects to the Cedar Lake LRT Regional Trail east of US -169, and provides further access to the north. Aside from these regional trails, however, there are no dedicated bicycle facilities serving existing residential and commercial areas. There is a limited trail network at Shady Oak Beach Park at the far southern portion of the bicycle study area that provides access across Shady Oak Lake and connections to some neighborhoods.</p>	Depot Coffee House/Cedar Lake LRT Regional Trail	194	118	TRPD; Monday, July 5, 2010
		11th Ave/ Cedar Lake LRT Regional Trail	357	19	TRPD; Sunday, Aug 14, 2011
		Excelsior Blvd Crossing (High)/Cedar Lake LRT Regional Trail	189	12	TRPD; Friday, June 1, 2012
		N Cedar Lake Regional Trail/2nd St	337	34	TRPD; Sunday, May 27, 2012
		N Cedar Lake Regional Trail/Madison Ave	119	14	TRPD; Saturday, Aug 20, 2011
		17th Ave/ Lake Minnetonka LRT Regional Trail	18	34	TRPD; Wednesday, June 20, 2012
		11th Ave/Lake Minnetonka LRT Regional Trail	106	9	TRPD; Thursday, June 3, 2010
Blake Station	<p><i>Pedestrian study area:</i> Land uses within the pedestrian study area are predominantly commercial, with some residential and open space in the southern and northern quadrants. Sidewalks are present on both sides of most roadways. There are no sidewalks in the residential subdivision just north of the proposed station or in the industrial area just south of the station. There are four signalized intersections with at least one pedestrian crosswalk along Blake Rd and Jackson Ave N. Additionally, there are seven unsignalized intersections with at</p>	Blake Rd/Cedar Lake LRT Regional Trail	340	44	TRPD; Sunday, July 29, 2012

Light Rail Station Area	Pedestrian and Bicycle Facilities and Access (by pedestrian and bicycle study areas)	Usage Count Location ^a	2-hour Count ^a		Count Source ^a
			Bicycle	Pedestrian	
	<p>least one marked crosswalk along 2nd St NE, Excelsior Blvd, and Blake Rd. The Cedar Lake LRT Regional Trail provides pedestrian access to the Blake Station from the east and west. A signalized, marked crossing provides a connection from the station to north-south sidewalks along Blake Rd N. A trail connection is also provided to Tyler Ave N, near the west end of the pedestrian study area.</p> <p><i>Bicycle study area:</i> There is a trail along a portion of Excelsior Blvd east of Blake Rd. The Cedar Lake LRT Regional Trail provides east-west bicycle- and pedestrian-specific access through the middle of the bicycle study area. The North Cedar Lake Regional Trail also provides north-south bicycle- and pedestrian-specific access on the west side of the bicycle study area, including a grade-separated crossing of Hwy 7. The Cedar Lake LRT Regional Trail provides bicycle access to the Blake Station from the east and west. Blake Rd N is the only means of access to the southern portions of the bicycle study area and provides the most direct access to the north, but the roadway does not include a dedicated bicycle facility. The North Cedar Lake LRT Regional Trail west of the station also provides access to the north. There are existing on-street bike lanes along Blake Rd S in the southern portion of the bicycle study area and the bike lanes end just south of Excelsior Blvd.</p>	Depot Coffee House/Cedar Lake LRT Regional Trail	194	118	TRPD; Monday, July 5, 2010
		Edgebrook Park Connections/Cedar Lake LRT Regional Trail	514	26	TRPD; Sunday, June 17, 2012
		Excelsior Blvd Crossing (High) /Cedar Lake LRT Regional Trail	189	12	TRPD; Friday, June 1, 2012
		Tyler Ave Spur/Cedar Lake LRT Regional Trail	144	8	TRPD; Monday, July 23, 2012
		N Cedar Lake Regional Trail/2nd St	337	34	TRPD; Sunday, May 27, 2012
		N Cedar Lake Regional Trail/Madison Ave	119	14	TRPD; Saturday, Aug 20, 2011
		N Cedar Lake Regional Trail/36th St	286	34	TRPD; Saturday, July 11, 2009
Louisiana Station	<p><i>Pedestrian study area:</i> Much of the land use within the pedestrian study area is low-rise, low-density office/light industrial, and connectivity is limited. There are residential uses in the east, west and north quadrants of the study area. Sidewalks are present on one side of Louisiana Ave S and W Lake St. There are two signalized intersections with at least one marked crosswalk along Louisiana Ave S. In addition, there are six unsignalized intersections with at least one marked crosswalks along Louisiana Ave S, Walker St, and W Lake St. The Cedar Lake LRT Regional Trail provides pedestrian access to the Louisiana Station from the east and west. An east-west sidewalk is provided along Oxford St, just south of the station. The sidewalk terminates at Louisiana Ave to the west of the station. A freight railroad spur south of the station is a barrier to pedestrian access, and sidewalks along Louisiana Ave comprise the only north-south connection within the pedestrian study area. There are sidewalks in the residential neighborhoods in the north and east quadrants of the study area. Hwy 7 is a barrier for pedestrian access to the proposed LRT station, an underpass on Louisiana Ave S is the only crossing.</p>	Edgebrook Park Connections/Cedar Lake LRT Regional Trail	514	26	TRPD; Sunday, June 17, 2012
		Louisiana Ave Spur/Cedar Lake LRT Regional Trail	376	43	TRPD; Sunday, May 27, 2012

Light Rail Station Area	Pedestrian and Bicycle Facilities and Access (by pedestrian and bicycle study areas)	Usage Count Location ^a	2-hour Count ^a		Count Source ^a
			Bicycle	Pedestrian	
	<p><i>Bicycle study area:</i> There is a north-south trail along the west side of Louisiana Ave that provides bicycle-specific access under the Cedar Lake LRT Regional Trail and freight rail tracks, although this trail ends at a driveway south of Lake St. Similarly, a trail on the east side of Louisiana Ave provides north-south bicycle access across Hwy 7 but transitions to a sidewalk at a driveway south of Lake Street and does not connect to the trail on the west side of Louisiana. The Cedar Lake LRT Regional Trail provides east-west bicycle- and pedestrian-specific access through the middle of the bicycle study area, including grade-separated crossings of Louisiana Ave and US 100. The Cedar Lake LRT Regional Trail provides bicycle access to the Louisiana Station from the east and west. Access from the trail to the north entrance of the station is provided on a grade-separated trail crossing over the parallel freight rail tracks. The trail is grade-separated to the east and west of the station above Louisiana Ave and under a perpendicular freight rail track, respectively. A trail connection is provided from the Cedar Lake LRT Regional Trail to the commercial parking lot on the east side of Louisiana Ave.</p> <p>Multiple rail lines and spurs preclude bicycle access to the commercial and residential areas south and east of the proposed station. Bicycle facilities are generally not present in the northern half of the bicycle study area. There is a limited trail network on park land at the northwestern portion of the bicycle study area. However, the trail network does not connect to other facilities outside of the park.</p>				
Wooddale Station	<p><i>Pedestrian study area:</i> The central portion of the pedestrian study area contains a mix of commercial, low-rise, low-density office/light industrial, and high density residential land uses. The north and south portions of the area are primarily low-density residential neighborhoods. Commercial and residential areas are generally served by sidewalks, but sidewalks are commonly lacking in the more industrial areas. The sidewalk network is intermittent in residential areas to the north and northwest of the proposed station. Wooddale Ave is the only pedestrian crossing across Hwy 7. There is one signalized intersection with at least one marked crosswalk on Wooddale Ave. There are marked crosswalks at five unsignalized intersections along W Lake St and Dakota Ave S. The Cedar Lake LRT Regional Trail provides pedestrian access to the Wooddale Station from the east and west. The single north-south connection across the parallel railroad tracks and Hwy 7 north of the station is provided via sidewalks and trails along Wooddale Ave S. Hwy 100 is a barrier for pedestrians on the east side of the area. 36th St W and the Cedar Lake LRT Regional Trail are the only crossings across Hwy 100.</p> <p><i>Bicycle study area:</i> There are trails on one side of Beltline Blvd and Monterey Dr. The Cedar Lake LRT Regional Trail provides east-west bicycle and pedestrian specific access through the middle of the bicycle study area and is grade separated from Hwy 100. There is a pedestrian and bicycle bridge that provides a north-south connection across Hwy 7 between Beltline Blvd and Raleigh Ave S. There is also an unnamed asphalt trail in Bass Lake Park. Similar to pedestrian access, the Cedar Lake LRT Regional Trail provides bicycle access to the Wooddale Station from the east and west, including one of the only crossings of Hwy 100. Bicycle access from the proposed station to the north is provided via a trail along the west side of Wooddale Ave S; however, the trail terminates just north of Hwy 7 and transitions to a sidewalk.</p>	Cedar Lake LRT Regional Trail, east of Beltline Blvd	394	N/A	TLC; Weekday in Sept 2013
		Wooddale Ave/Cedar Lake LRT Regional Trail	571	64	TRPD; Sunday, Aug 23, 2009
		Louisiana Avenue Spur/Cedar Lake LRT Regional Trail	376	43	TRPD; Sunday, May 27, 2012
		Lilac Park Spur / Cedar Lake LRT Regional Trail	501	28	TRPD; Saturday, Aug 2, 2011
Beltline Station	<p><i>Pedestrian study area:</i> The area contains a mix of commercial, low-rise, low-density office/light industrial, and high density residential land uses. The sidewalk network is intermittent throughout much of the pedestrian study area. There is a sidewalk on one side of Beltline Blvd, and a signalized crossing at the intersection of Beltline Blvd/CR-25 that provides access across County Rd 25 but not Beltline Blvd. There are seven signalized intersections with at least one marked crosswalk along Beltline Blvd and Minnetonka Blvd. Sidewalks are available on both sides of Minnetonka Blvd, in addition to unsignalized marked crosswalks on five roadways along Minnetonka Blvd. A marked trail crossing is provided at Beltline Blvd near the proposed station entrance. A marked crossing is provided at the four-way stop at Beltline Blvd/Park Glen Rd. In</p>	Cedar Lake LRT Regional Trail, east of Beltline Blvd	394	N/A	TLC; Weekday in Sept 2013

Light Rail Station Area	Pedestrian and Bicycle Facilities and Access (by pedestrian and bicycle study areas)	Usage Count Location ^a	2-hour Count ^a		Count Source ^a
			Bicycle	Pedestrian	
	<p>addition, there is a pedestrian and bicycle bridge that provides north-south access across Hwy 7/County Rd 25 between Beltline Blvd and Raleigh Ave S. The Cedar Lake LRT Regional Trail provides pedestrian access to the proposed Beltline Station from the east and west. A grade-separated crossing over the light rail tracks is provided immediately east of the station where the trail shifts from the north to the south side of the light rail alignment. The trail along Beltline Boulevard provides pedestrian access to the station from the north and south. Hwy 100 is a barrier for pedestrians on the west side of the study area, with the only crossing available on the Cedar Lake LRT Regional Trail.</p> <p><i>Bicycle study area:</i> There are trails on one side of Beltline Blvd and Monterey Dr. The Cedar Lake LRT Regional Trail provides east-west bicycle and pedestrian specific access through the middle of the bicycle study area. Similar to pedestrian access, the realigned Cedar Lake LRT Regional Trail provides bicycle access to the Beltline Station from the east and west. A trail with marked crossings is also provided along W 36th St/Monterey Dr east of the station.</p> <p>The grade-separated crossing over Hwy 7/County Rd 25 provides access to the north but the trail connection terminates at the intersection of Toledo Ave S and Minnetonka Blvd. South of the proposed station, the trail connection along Beltline Blvd turns to the east along W 36th St/Monterey Dr, and ultimately terminates at Park Commons Dr. There is a limited trail network in Bass Lake Park that connects to the Cedar Lake LRT Regional Trail to the east and to a residential neighborhood south of Bass Lake Park.</p>	Beltline Blvd/ Cedar Lake LRT Regional Trail	469	92	TRPD; Saturday, Aug 6, 2011
		Lilac Park Spur / Cedar Lake LRT Regional Trail	501	28	TRPD; Saturday, Aug 2, 2011
West Lake Station	<p><i>Pedestrian study area:</i> The station area contains a mix of commercial, high rise office, and high and low density residential land uses. The sidewalk network is reasonably complete in the commercial and high density residential areas south and east of the station, but is intermittent in low-density residential areas north and west of the proposed station. There are six signalized intersections with at least one marked crosswalk along France Ave S, W Lake St, Excelsior Blvd, and Minnetonka Blvd. The Cedar Lake LRT Regional Trail provides pedestrian access to the proposed West Lake Station from the southwest and northeast. The trail crosses under W Lake Street immediately east of the station, and connects to the Midtown Greenway Trail near the east edge of the pedestrian study area. The parallel freight rail tracks northwest of the proposed station present a barrier to pedestrian access to the north, and users must take stairs or an elevator to access W Lake St and proceed to the west. There are also trails around the perimeter of Lake Calhoun and Cedar Lake.</p> <p><i>Bicycle study area:</i> There is a bike lane on Sunset Blvd and a trail on one side of Cedar Lake Pkwy and Calhoun Pkwy. The Cedar Lake LRT Regional Trail provides east-west bicycle- and pedestrian-specific access through the middle of the bicycle study area and connects to the Midtown Greenway and the Kenilworth Trail. Similar to pedestrian access, the Cedar Lake LRT Regional Trail provides bicycle access to the proposed West Lake Station from the southwest and northeast. The parallel freight rail tracks northwest of the station present a barrier to bicycle access to the northwest and users must take stairs/elevator to access W Lake St and proceed west.</p>	Cedar Lake LRT Regional Trail, east of Beltline Blvd	394	N/A	TLC; Weekday in Sept, 2013
		Cedar Lake Pkwy, East of Kenilworth Trail	122	50	DEIS; Wednesday, Sept 15, 2009
		Cedar Lake Pkwy, West of Kenilworth Trail	161	76	City of Mpls, Weekday in Sept 2014
		West Lake Calhoun Pkwy S north of Rose Lane W	304	418	City of Mpls, Weekday in Sept 2013
		Market Plaza S south of Lake St W	20	102	City of Mpls, Weekday in Sept 2014
		Lake St W east of Market Plaza S	10	54	City of Mpls, Weekday in Sept 2014
21st Street Station	<p><i>Pedestrian study area:</i> The proposed 21st Street Station is situated on a narrow strip of land between Cedar Lake and Lake of the Isles, and is surrounded by residential land uses. Sidewalks are available on both sides of the roadways. There are no existing signalized pedestrian crossings. There are four unsignalized, marked crosswalks along Penn Ave, W 21st St and Cedar Lake Ave. The Kenilworth Trail provides access from the</p>	Kenilworth Trail, north of Cedar Lake Pkwy	419	73	City of Mpls, Weekday in Sept 2013

Light Rail Station Area	Pedestrian and Bicycle Facilities and Access (by pedestrian and bicycle study areas)	Usage Count Location ^a	2-hour Count ^a		Count Source ^a
			Bicycle	Pedestrian	
Light Rail Station Area	<p>north and south, which connects to the Cedar Lake Trail to the north of the proposed station. The network of sidewalks within the residential land uses to the east provide east/west access, with W 21st St providing the most continuous route. A trail connection to East Cedar Beach on Cedar Lake is provided immediately west of the proposed station. A trail around the perimeter of Lake of the Isles provides an additional pedestrian connection to the proposed LRT station.</p> <p><i>Bicycle study area:</i> There is a bike lane on Sunset Blvd, and a trail on one side of each of the following roadways: Theodore Wirth Pkwy, Cedar Lake Pkwy, Lake of the Isles Pkwy, and Calhoun Pkwy. The Kenilworth Trail provides north-south bicycle- and pedestrian-specific access through the middle of the bicycle study area. Southeast of the station, the Kenilworth Trail connects to the Midtown Greenway and the Cedar Lake LRT Regional Trail, both of which provide east-west access in the southern portion of the bicycle study area. In addition, the North Cedar Lake Regional Trail and the Cedar Lake Trail provide east-west access through the northern portion of the bicycle study area. The Cedar Lake Trail includes a grade-separated crossing of I-394. The Kenilworth Trail provides bicycle access to the proposed 21st Street Station from the north and south, but residential roadways must be used for access from the east. Dedicated bicycle facilities are not present within the residential portions of the bicycle study area. South of the station, the Kenilworth Trail connects to the Cedar Lake LRT Regional Trail which provides access to the southwest along the perimeter of Cedar Lake. There is no direct, dedicated bicycle connection to the trail along Lake of the Isles Pkwy.</p>	Kenilworth Trail, south of Cedar Lake Pkwy	430	74	City of Mpls, Weekday in Sept 2013
		Cedar Lake Pkwy, West of Kenilworth Trail	161	76	City of Mpls, Weekday in Sept 2014
		21st St W west of Penn Av S	25	35	City of Mpls, Weekday in Sept 2014
		Penn Av S north of 21st St W	9	56	City of Mpls, Weekday in Sept 2014
Penn Station	<p><i>Pedestrian study area:</i> Land uses within the pedestrian study area are predominantly residential and open space, with a small amount of commercial use to the west of the station. Sidewalks are present in most areas. In the residential neighborhoods north of the station and southeast of the station, there are sidewalks on both sides of the roadway. The Project includes sidewalks on Wayzata Blvd as far west as Madirea Ave, and there are sidewalks crossing I-394 on Penn Ave. There are two signalized intersections with marked crosswalks at the Penn Ave/I-394 on/off ramps and three additional intersections with unsignalized, marked crosswalks along Penn Ave. There is a pedestrian and bicycle bridge along the south side of I-394 with a vertical connection to the Cedar Lake Trail. The Kenilworth Trail and Cedar Lake Trail provide pedestrian access to the station from the east and west. A trail around the perimeter of Lake of the Isles connects to other sidewalks in the area. As part of the Project, pedestrian access to the north would be provided by an elevated crossing connecting to Wayzata Blvd over the freight rail tracks. This crossing is accessed by stair or elevator. I-394 is a barrier with limited crossings for pedestrians traveling north-south in the area. There are three pedestrian crossings over/under I-394: Penn Ave, the Cedar Lake Trail, and a pedestrian bridge west of the proposed LRT station that connects S Wayzata Blvd and S Thomas Ave/N Wayzata Blvd.</p> <p><i>Bicycle study area:</i> There are trails on one side of Theodore Wirth Pkwy, Lake of the Isles Pkwy, Kenwood Pkwy and Van White Memorial Blvd. The Cedar Lake Trail provides east-west bicycle- and pedestrian-specific access through the middle of the bicycle study area. The Kenilworth Trail also provides north-south bicycle- and pedestrian-specific access through the western portion of the bicycle study area. The Luce Line Regional Trail also provides east-west bicycle- and pedestrian-specific access through the northern portion of the bicycle study area. The Cedar Lake Trail and Kenilworth Trail provide bicycle access to the proposed station from the east and west. Bicycle access to the north is limited by the freight rail tracks and grade. Bicycle access to the south is limited due to the grade. East of the proposed station, there is a connection between the Kenilworth Trail and Kenwood Pkwy.</p>	Cedar Lake Trail, under I-394	534	37	TLC; Weekday in Sept 2013
		Cedar Lake Trail west of Kenilworth Trail	540	84	City of Mpls, Weekday in Sept 2014
		Cedar Lake Road S east of Penn Av S	179	37	City of Mpls, Weekday in Sept 2012
		Cedar Lake Trail under I-394	307	58	City of Mpls, Weekday in Sept 2014
Van White Station	<p><i>Pedestrian study area:</i> Land uses within the pedestrian study area include light industrial to the north, open space to the west, and the Dunwoody College of Technology campus and Parade Stadium to the south and east of the station. There are also low-density residential neighborhoods on the northern, western, and southern edges of the area. There are sidewalks on at least one side of most roadways. There are four signalized intersections with at least one marked crosswalk along Glenwood Ave and Dunwoody Blvd. A pedestrian and bicycle bridge provides north-south access across the Cedar Lake Trail and the adjacent rail</p>	7th St. N over I-94	33	N/A	TLC; Weekday in Sept, 2013
		Cedar Lake Trail under I-394	307	58	City of Mpls, Weekday in Sept 2014

Light Rail Station Area	Pedestrian and Bicycle Facilities and Access (by pedestrian and bicycle study areas)	Usage Count Location ^a	2-hour Count ^a		Count Source ^a
			Bicycle	Pedestrian	
	<p>line. This bridge connects the Cedar Lake Trail and Van White Memorial Blvd to the Luce Line Regional Trail. I-94 and I-394 are barriers for pedestrians in the area. A pedestrian bridge crosses I-94/Lyndale Ave and provides an east-west pedestrian connection between Loring Park and Kenwood Pkwy. The Cedar Lake Trail provides pedestrian access to the proposed station from the southwest and northeast, crossing underneath I-94. A sidewalk under I-394 along Dunwoody Blvd connects the station to the college campus to the east. A trail along the east side of Van White Memorial Blvd provides access to the north. This trail on the bridge includes a grade-separated crossing over the proposed station and parallel railroad tracks north of the station.</p> <p><i>Bicycle study area:</i> There are trails along one side of Kenwood Pkwy and Van White Memorial Blvd. The Cedar Lake Trail provides east-west bicycle- and pedestrian-specific access through the middle of the bicycle study area and connects to the Kenilworth Trail. There are on-street bike lanes on the east side of the bicycle study area, in downtown Minneapolis. Bicycle access to the proposed Van White Station generally utilizes the same connections as pedestrian access in the vicinity of the station; however, no bicycle connectivity is provided to the east of the station to the Dunwoody College of Technology campus. Luce Line Regional Trail, a signed bike route along N. Cedar Lake Rd. and, a trail along the east side of Van White Memorial Blvd provide bicycle connections to residential areas north of I-394. Areas east of the proposed station lack bicycle facilities.</p>	Van White Memorial Blvd S over Cedar Lake Trail	34	10	City of Mpls, Weekday in Sept 2014
		Kenwood Pkwy W west of Spring Lake Trail	28	48	City of City of Mpls, Weekday in Sept 2013
		Spring Lake Trail north of Kenwood Pkwy W	43	31	City of Mpls, Weekday in Sept 2013
Royalston Station	<p><i>Pedestrian study area:</i> Within the pedestrian study area, the proposed Royalston Station is surrounded on all sides by a mix of commercial, low-rise, low-density office/light industrial, and heavy industrial land uses, which include the Target Field stadium at the east edge of the pedestrian study area and the Minneapolis Farmers Market on the west edge of the study area. There are sidewalks on at least one side of the roadways. There are signalized crossings at many intersections in the pedestrian area, primarily in the eastern portion, closer to the central business district of Minneapolis. Signalized crossings are also available at some intersections of Olsen Memorial Hwy, Glenwood Ave, N 7th St, and 6th Ave N. Access between the proposed station and the stadium is provided via a sidewalk connection along 5th Ave N to N 7th St, or via a longer, more circuitous route south of the station via Twins Way or the Cedar Lake Trail. Sidewalks along Royalston Ave N provide access to commercial areas south of the proposed station; however, sidewalks in this area are routinely obstructed by obstacles such as light poles and fire hydrants. There is not a direct connection between the proposed Royalston Station and the Minneapolis Farmers Market. Access between the station and the Minneapolis Farmers Market will be relatively circuitous, provided via a sidewalk connection along Royalston Ave N to Border Ave N. I-394 and I-94 are barriers for pedestrians, but crossings are available at many intersecting roadways in the study area. I-94 crossings include Glenwood Ave and Olsen Memorial Hwy, which both provide east-west connections toward the proposed station.</p> <p><i>Bicycle study area:</i> There are many on-street bike lanes, primarily east of the station in downtown Minneapolis. The Cedar Lake Trail provides east-west bicycle- and pedestrian-specific access through the middle of the bicycle study area and connects to the West River Pkwy trail, which runs adjacent to the Mississippi River. There are also trails along one side of Kenwood Pkwy and Van White Memorial Blvd. The Cedar Lake Trail provide bicycle access to the proposed station from the southwest and northeast via a trail spur connection to Royalston Ave N. Bike lanes along Glenwood Dr south of the proposed station provide a connection to the western portions of the bicycle study area, and to a trail along Van White Memorial Blvd near the west edge of the study area. The eastbound bike lane along Glenwood Dr continues east of the station, across I-394, and terminates at 10th St N. There is no corresponding westbound crossing of I-394. With the exception of these trail and bike lane connections, the western portion of the bicycle study area is largely served by sidewalks, and there are no other bicycle facilities.</p>	Cedar Lake Trail, east of Royalston	580	27	TLC; Weekday in Sept 2013
		Glenwood Ave, west of Royalston Ave	51	N/A	TLC; Weekday in Sept 2013
		7th St N over I-94	33	N/A	TLC; Weekday in Sept 2013
		Cedar Lake Trail, west of Royalston exit	534	N/A	TLC; Weekday in Sept 2013
		Cedar Lake Trail north of Royalston Ave N	556	84	City of Mpls, Weekday in Sept 2014

^a Sources: City of Minneapolis (Mpls), 2014, Bicycle and pedestrian counts. Available at: <http://minneapolismn.gov/www/groups/public/@publicworks/documents/images/wcms1p-135319.pdf>. Accessed: February, 2015. Transit for Livable Communities (TLC). 2013. Bike Walk Twin Cities 2013 Report. Available at: <http://www.bikewalktwincities.org/sites/default/files/bwtc-2013-count-report-final-lowres.pdf>. Accessed: February, 2015. Three Rivers Park District (TRPD). 2015. Bicycle and pedestrian counts. Available from the Park District.

N/A = not available; TLC = Transit for Livable Communities; TRPD = Three River Park District.

land use characteristics, and the roadway network near the station areas. This section also includes a summary of trail ownership and trail Section 4(f) eligibility.

4.5.2.1 Existing Pedestrian and Bicycle Networks

Pedestrian and bicycle facilities must be evaluated in the context of their larger network in order to understand the impact the Project may have on this resource area. Land use context is an important component of the walkability and bikeability of a given station area. Walkability and bikeability are qualitative measures of how conducive an area is to walking and biking, respectively. Land use influences the quality of pedestrian and bicycle networks; for example, by affecting frequency of connectivity through block size. In addition, pedestrians require somewhere to walk to or from within the walking range of a light rail station in order to consider accessing the station by foot. While bicycle users will typically travel a longer distance than pedestrians, connectivity and directness of route also influence bicycle access to a light rail station. A longer, more circuitous route between the station and their destination may discourage people from considering accessing the station by bicycle. Existing land use and potential impacts to land use associated with the Project are described in greater detail in Section 3.1.

Table 4.5-1 includes a description of the existing pedestrian and bicycle facilities and usage for the pedestrian and bicycle study areas, by station area. These features are discussed in the context of station access and how they would be used by pedestrians or bicyclists to reach the station. Usage counts are provided to illustrate the magnitude of current pedestrian and bicycle activity in the study areas. Exhibits 4.5-1 and 4.5-2 illustrate the pedestrian and bicycle study areas.

4.5.2.2 Trail Ownership

Following is a description of the ownership and purpose of regional and local trails that may be affected by the Project.

A. Regional Trails

Seven trails within the pedestrian and bicycle study areas comprise a relatively unified trail system that extends from Chanhassen in the south to the Mississippi River riverfront in downtown Minneapolis.³⁰ Each trail, except for the North Cedar Lake Regional Trail and a portion of the Cedar Lake Trail, is within HCRRA-owned right-of-way, except at a few connections across roadways or where geographic features require the trails to deviate from that right-of-way.

As noted in the Project's Draft EIS (Section 7.4) and Supplemental Draft EIS (Section 3.4.1.4), trails built within HCRRA-owned right-of-way have temporary permit agreements in place between HCRRA and the trail owner. Those temporary permit agreements specify that the trail is a temporary permitted use within a portion of the HCRRA-owned right-of-way. The temporary permit agreements specify that the primary purpose of the right-of-way is for the future construction of light rail and other transportation purposes (the HCRRA permit agreements are provided in Appendix I). As documented in each trail's temporary permit agreement, HCRRA permitted these trails as temporary uses with the stipulation that they may be used by the permittee until HCRRA develops their right-of-way for a light rail system or other permitted transportation use. The temporary permit agreements are consistent with the HCRRA's Interim Use Policy. The temporary lease agreements may be terminated by HCRRA at their discretion. There are no other easements, leases, or agreements associated with these trails on the HCRRA-owned right-of-way. In summary, FTA has determined that Section 4(f) does not apply to these trails as per 23 CFR 7744.11(h), because (1) the primary purpose and function of the HCRRA right-of-way is for transportation, not park, recreation, or wildlife/waterfowl refuge; and (2) the trail use is designated as a temporary use within that transportation right-of-way. (See Chapter 6 for additional information on Section 4[f]).

³⁰ This regional trail system is described in the Metropolitan Council's *2040 Regional Parks Policy Plan* (Council, 2015c); however, the Metropolitan Council is not the owner of any of the trails.

EXHIBIT 4.5-1

Existing Bicycle and Pedestrian Facilities

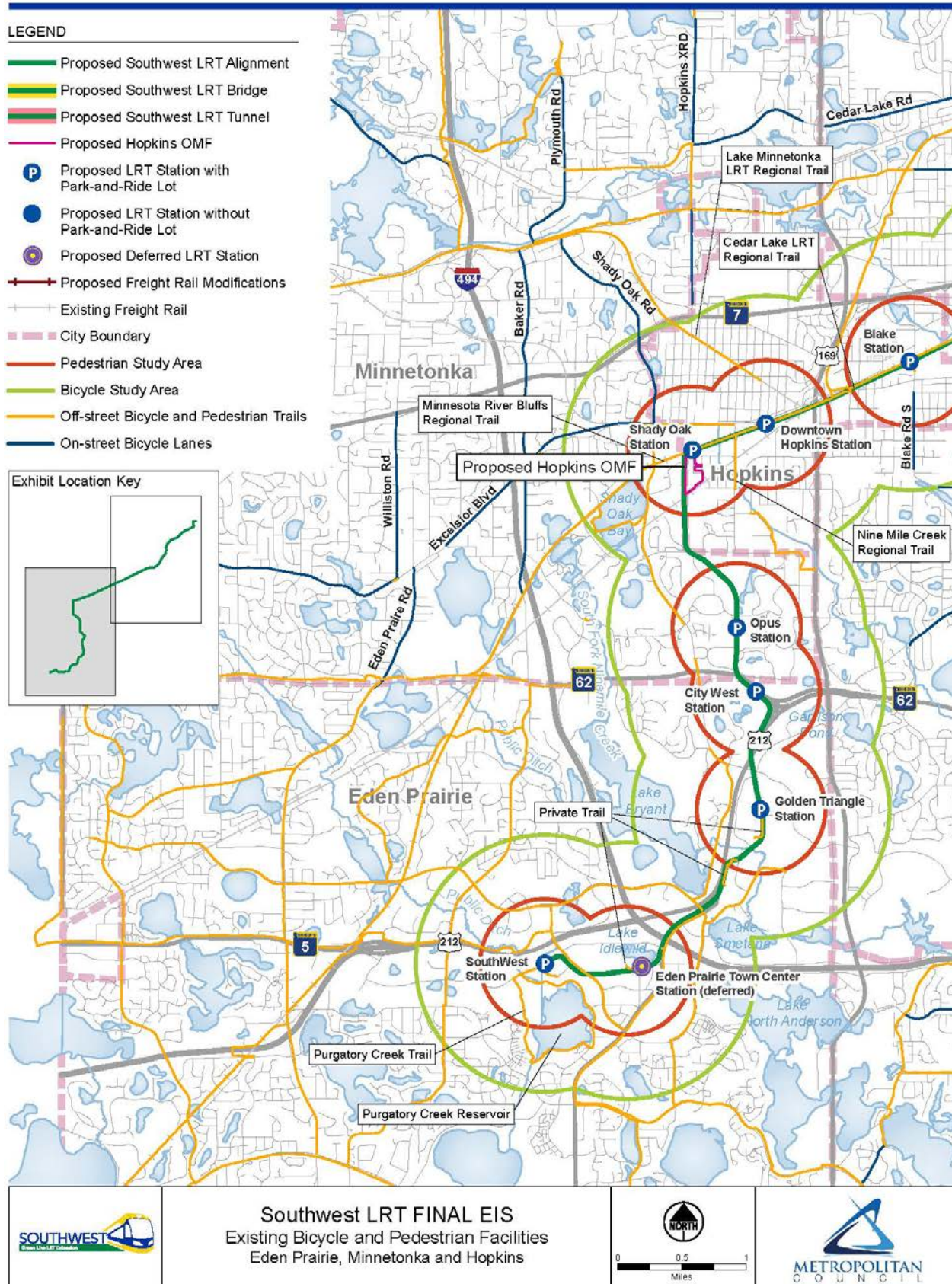
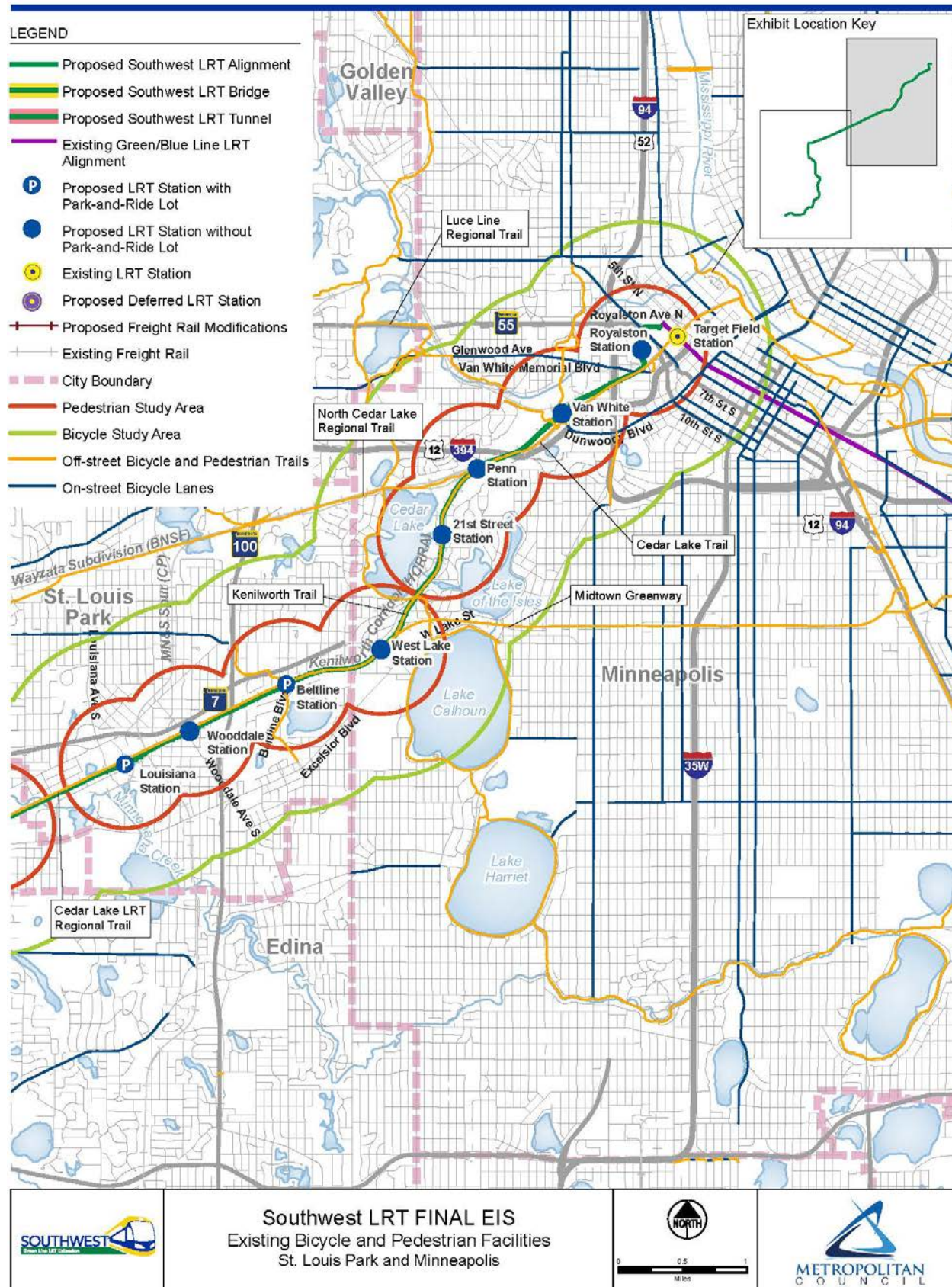


EXHIBIT 4.5-2

Existing Bicycle and Pedestrian Facilities



The regional trails located inside the study area are described below:

- **Minnesota River Bluffs Regional Trail**, which extends from Flying Cloud Drive in Chanhassen in the south to 11th Avenue South in Hopkins where it connects to the Cedar Lake LRT Regional Trail. The Minnesota Bluffs Regional Trail is located on property owned by HCRRA and operated/maintained by the TRPD.
- **Cedar Lake LRT Regional Trail**, which extends from 11th Avenue South in Hopkins (connecting to the Minnesota River Bluffs Regional Trail) to a point approximately 0.10 mile northeast of West Lake Street, where the trail continues as the Kenilworth Trail. The Cedar Lake LRT Regional Trail is located on property owned by HCRRA and is operated/maintained by TRPD.
- **Kenilworth Trail**, which begins approximately 0.10 mile northeast of West Lake Street and terminates near Highway 2, where the trail continues as the Cedar Lake Trail. The Kenilworth Trail is located on property owned by HCRRA; the trail is owned by the City of Minneapolis and is operated/maintained by the Minneapolis Parks and Recreation Board (MPRB).
- **Midtown Greenway**, which connects to the Kenilworth Trail and Cedar Lake LRT Regional Trail in the vicinity of West Lake Street. The Midtown Greenway is approximately 5.5 miles in length, connecting to paths along the Mississippi River. In the pedestrian and bicycle study areas, the Midtown Greenway is on property owned by HCRRA and is dually operated/maintained by the City of Minneapolis and Hennepin County.
- **Cedar Lake Trail**, which extends eastward and westward from its connection to the Kenilworth Trail at the Kenilworth Trail's northernmost point (adjacent to the northeast corner of Cedar Lake Park). West of the Kenilworth Trail, the Cedar Lake Trail is within the Cedar Lake Park,³¹ on property owned by MPRB. From I-394 to a point approximately 400 feet west of I-94, the Cedar Lake Trail is on property owned by the City of Minneapolis. The remainder of the trail is on property owned by HCRRA. The trail is owned by the City of Minneapolis and is operated/maintained by the MPRB. The Cedar Lake Trail is part of the Grand Rounds Scenic Byway.
- **North Cedar Lake Regional Trail**, which continues westward from its junction with the Cedar Lake Trail, extends through St. Louis Park and then arcs southward where it connects to the Cedar Lake LRT Regional Trail just east of Highway 169 in Hopkins. In the pedestrian and bicycle study areas, the North Cedar Lake Regional Trail is owned and maintained by the Three Rivers Park District west of Cedar Lake Park.
- **Luce Line Regional Trail**, which connects to the Cedar Lake Trail by way of a pedestrian and bicycle bridge over the freight rail just west of Van White Memorial Boulevard, extends west to outside the city limits of Minneapolis where it connects to Theodore Wirth Parkway and the Grand Rounds Scenic Byway. It is owned and maintained by the MPRB.

B. Local Trails

Table 4.5-2 lists local public trail segments that will be affected by the Project. The information in Table 4.5-2 was derived from a review of applicable jurisdictions' comprehensive plans and official park/trail maps, in tandem with real property research conducted by MnDOT and subsequent assessment of proposed property acquisitions; unaffected trails within the pedestrian and bicycle study areas are not listed in the table.

Based on property ownership research conducted for the Project, each of the trail segments listed in Table 4.5-2, aside from ID numbers 5 and 6, are located on publicly owned transportation right-of-way (i.e., road, highway); because the continuity of these trails located inside transportation right-of-way will be maintained they are exempted from Section 4(f) requirements per 23 CFR 774.13(f)(3). The applicability of Section 4(f) to the respective publicly owned trail segments affected by the Project are noted in Table 4.5-2.³²

³¹See Section 3.6 for additional information on Cedar Lake Park.

³² See Chapter 6 for additional information on Section 4(f) requirements and Section 4(f) properties.

Per 23 CFR 774.17, a Section 4(f) park/recreation property must be “publicly owned.” The *Section 4(f) Policy Paper* (FHWA, 2012), provides further guidance, as follows: “When private institutions, organizations, or individuals own parks, recreational areas or wildlife and waterfowl refuges, Section 4(f) does not apply, even if such areas are open to the public. However, if a governmental body has a permanent proprietary interest in the land (such as a permanent easement, or in some circumstances, a long-term lease), FHWA will determine on a case-by-case basis whether the particular property should be considered publicly owned and, thus, if Section 4(f) applies (See Questions 1B and 1C).” Per 23 CFR 774.17 and the Section 4(f) Policy Paper guidance, privately owned trails with no underlying public recreational easements are exempted from Section 4(f). Each of the private trails affected by the project are listed in Table 4.5-3; those trails which are privately owned and contain no public access easements for recreation purposes are not considered Section 4(f) properties.

Section 4.5.3 describes long-term and short-term impacts to local trails.

TABLE 4.5-2

Summary Information about Local Public Trails Affected by the Project

ID#	Trail Segment Location	Owner	Section 4(f) Property? ^a
1	North side of Technology Dr, south of SouthWest Station	City of Eden Prairie	No
2	Outside the northeast boundary of Purgatory Creek Park on City-owned land	City of Eden Prairie	No
3	South side of Technology Dr west of Flying Cloud Dr	City of Eden Prairie	No
4	East and west sides of Flying Cloud Dr between Technology Dr and Prairie Center Dr	City of Eden Prairie	No
5	East of Bren Rd E near the proposed Opus Station (Opus development trail network)	City of Minnetonka	Yes
6	North of Bren Road W, south of Smetana Rd (Opus development trail network)	City of Minnetonka	Yes
7	East side of 11th Ave S where 11th Ave S intersects the Project and existing freight tracks	City of Hopkins	No
8	West side of Blake Rd N south of where Blake Rd N intersects the Project and existing freight tracks	City of Hopkins	No
9	East side of Wooddale Ave S where Wooddale Ave S intersects the Project and existing freight tracks	City of St. Louis Park	No
10	West side of Beltline Blvd north of the Cedar Lake Regional LRT Trail	City of St Louis Park	No
11	East side of Beltline Blvd where Beltline Blvd intersects the Project and existing freight tracks	City of St. Louis Park	No
12	Located adjacent to Cedar Lake Pkwy where Cedar Lake Pkwy intersects existing freight tracks	Minneapolis Park and Recreation Board	No
13	Segment of Luce Line Regional Trail that extends between Bryn Mawr Meadows Park (across existing freight line) and the Cedar Lake Trail	Minneapolis Park and Recreation Board	No

^a See Chapter 6 for information on Section 4(f) and for FTA’s determinations for Section 4(f) properties.

TABLE 4.5-3

Summary Information about Local Private Trails Affected by the Project

Trail Segment Location	Owner
An approximately 500-foot trail connecting a parking lot to an outdoor pavilion between the Eden Prairie Town Center station and Lake Idlewild	Private
An approximately 1/4-mile trail connecting office buildings to Flying Cloud Drive along US 212, north of Valley View Rd.	Private
An approximately 1/2-mile trail between Flying Cloud Drive and W 70th Street	Private

4.5.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect impacts on pedestrian and bicycle transportation from the Project. Direct pedestrian and bicycle impacts occur where physical encroachments into pedestrian and bicycle travel ways, proposed realignments of these travel ways, and other modifications will occur. Indirect impacts occur where the Project will result in a change to the pedestrian and bicycle environment that will have implications for how pedestrians and bicyclists travel in their respective study areas.

4.5.3.1 Long-term Direct Pedestrian and Bicycle Impacts

The Project will result in long-term direct changes to the pedestrian and bicycle facilities in the respective study areas.³³ Direct changes may include intersection modifications, new station area platform access points, new at-grade sidewalk and trail crossings of LRT tracks, and modifications to trail widths.

In some cases, the Project will include the addition of facilities or modification of the existing environment in ways that will have a positive long-term direct impact on pedestrian and bicycle travel. For example:

- Signalization of currently unsignalized roadway intersections will improve pedestrian and bicyclist safety and the ability of pedestrians and bicyclists to cross roadways, resulting in a positive effect on pedestrian and bicycle circulation. Eight new signalized crossings are included in the Project, as follows:
 - Eden Road east of the Eden Prairie Town Center Station³⁴
 - The intersection of Flying Cloud Drive and Viking Drive
 - The intersection of Excelsior Boulevard and Pierce Avenue
 - Two at the interchange of Wooddale Avenue and Highway 7
 - The intersection of Highway 25 and Lynn Avenue
 - The intersection of Royalston Avenue and Holden Street
 - The intersection of 7th Street North and 5th Avenue North
- Construction of new sidewalks or continuation of existing sidewalks around station areas will improve general pedestrian circulation and provide station access. Where appropriate, sidewalks will connect the light rail stations to off-site pedestrian origination and destination points within 1/2 mile of the platform.
- Geometry changes to roadways (e.g., new or modified medians, driveway modifications, or curb extensions) may result in reduced pedestrian crossing distances and, therefore, reduced potential for conflict with motor vehicles. For example, these types of geometry changes and reduced pedestrian crossing distances will occur near the proposed Downtown Hopkins Station.

In some cases, the Project will include the modification of the existing environment in ways that may have a long-term direct effect on pedestrian and bicycle travel that could be adverse. These impacts will be minimized or avoided as part of the Project. These changes, which are described in detail below, include at-grade sidewalk and/or trail crossings, intersection and facility designs, relocation of public trails, trail and station area conflicts, Kenilworth Trail widths, displacement of private trails, and a loss of queuing space for the at-grade LRT and freight crossing near Penn Station.

³³ The Project also includes LRCIs, which generally result in long-term positive impacts to the pedestrian and bicycle network due to added/upgraded facilities for bicycle and pedestrian use, removal of conflict points between pedestrians/bicycles and motor vehicles, and creation of a more inviting space for pedestrian and bicycle use.

³⁴ As described in Section 2.1.1, the Eden Prairie Town Center Station and associated roadway improvements are deferred and are not expected to be in place when the Project opens in 2020; however, the traffic signal at this intersection will be installed with or without the station. The station and associated improvements are planned to be in place by 2040.

At-grade Sidewalk and/or Trail Crossings

Crossings of the LRT tracks will occur at the following locations:

- Each station area, providing access from the platform across the tracks³⁵
- Eden Road / Redstone Driveway
- Technology Drive / Flying Cloud Drive
- Viking Drive / Flying Cloud Drive
- West 70th Street
- 5th Street South
- 11th Avenue South
- 8th Avenue South
- 5th Avenue South
- Blake Road
- Wooddale Avenue
- Beltline Avenue
- Cedar Lake Avenue
- 21st Street
- Cedar Lake Trail west of Penn Station
- Royalston Avenue North / Holden Street North

Pedestrian and bicycle crossings of these track locations have been designed based on current industry standards. Industry standards include, but are not limited to, flashing light signal assemblies with an audible warning to notify pedestrians and bicyclists of a train's arrival at crossing locations.³⁶ These crossing treatments may also include detectable warnings³⁷ and signs.³⁸

The at-grade LRT crossing for trail users on the Cedar Lake Trail west of Penn Station is near an existing at-grade freight rail crossing. Two-way, two-hour trail volumes along the Cedar Lake Trail were measured to be 540 bicycles in this area, so a review of the new crossing here merits additional attention.³⁹ Freight crossings occur approximately two to three times a day and block the trail. The freight and LRT at-grade crossings will be separated, with the freight crossing located approximately 200 feet west of the LRT crossing at this location. Based on trail volumes at this crossing, a queue of 30 to 40 bicyclists is expected during a freight rail crossing. Exhibit 4.5-3 shows an excerpt from the Preliminary Engineering Plans (see Appendix E), the total area of the trail in this space is 2,400 square feet, room for at least 100 bicyclists to stand comfortably. By shifting the freight rail crossing west, the space available for queuing between the two crossings is more than sufficient for an average amount of people with bicycles to stand and wait.

³⁵ Specific to access to the West Lake Station, the *West Lake Multimodal Transportation Study* was completed in February 2016. The goal of the study was to identify opportunities to address non-motorized and motorized travel within the West Lake LRT Station area with projects that can be implemented as a part of the construction of the Southwest LRT or as part of other capital initiatives. Information about the study can be found at <http://www.ci.minneapolis.mn.us/cip/all/WCMS1P-138480>

³⁶ Source: Transit Cooperative Research Program Report 17: Integration of Light Rail Transit into City Streets, 1996.

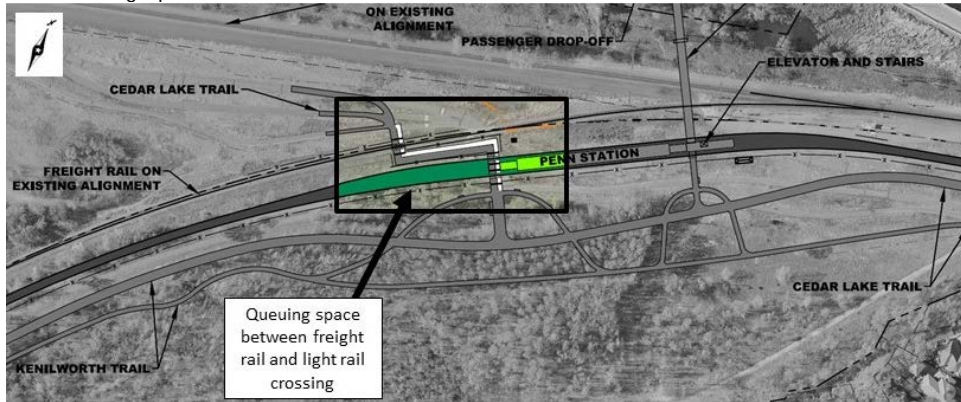
³⁷ Detectable warnings are a distinctive surface pattern of domes detectable by cane or underfoot that alert people with vision impairments of their approach to street crossings and hazardous drop-offs. Source: US Access Board.

³⁸ Refer to Transit Cooperative Research Program Report 17 for an example crossing treatment (Transit Cooperative Research Program, 1996).

³⁹ Source: City of Minneapolis. 2014. *Bicycle and pedestrian traffic counts*. Available at: <http://minneapolismn.gov/bicycles>. Accessed: February 2015.

EXHIBIT 4.5-3

Trail Queuing Space Near Penn Station



As a result, trail users waiting for a freight train to pass will not interact with the light rail tracks or the intersection of Cedar Lake Trail and Kenilworth Trail to the south. Therefore, the Project will not result in an adverse long-term direct impact to the existing pedestrian and bicycle network at this location.

Intersection and Facility Design

Based on the manuals, standards, and engineering best practices used as part of the Project, the following will apply to changes to pedestrian and bicycle facilities (see Section 4.5.1 for a list of design references):

- ADA-compliant curb ramps and detectable warnings have been designed and will be constructed to the latest standard at light rail stations, at-grade crossings of LRT tracks, as well as at roadway intersections that will be modified (e.g., accommodating light rail crossing, widening roadway for vehicle traffic).⁴⁰
- Widening intersections to provide additional vehicle capacity will result in increased pedestrian crossing distance. At signalized intersections, pedestrian change intervals (flashing don't walk) times will be updated by the appropriate jurisdiction to allow additional crossing time with the assistance from the Council. As appropriate and in coordination with the applicable jurisdiction, the Project's modification to roadway geometry and local jurisdiction's changes to signalized intersections will conform to the Minnesota Department of Transportation's *Minnesota Manual of Uniform Traffic Control Devices, 2015 Edition*.

Stairs, Ramps, and Elevators

At the Opus, West Lake, and Penn light rail stations, grades may inhibit direct pedestrian and bicycle access to the station from all directions. In these areas, stairs and ramps will be provided to make pedestrian and bicycle connections possible. In these cases, ramps have been designed for the safe and comfortable use by both pedestrian and bicycle users in addition to being to be ADA compliant. Where appropriate, the Project will follow the recommendations from the AASHTO Bike Design Guide.⁴¹ Elevators will be provided at the West Lake and Penn stations.

Relocation of Public Trails

Beginning in the City of Hopkins, and continuing to its terminus at the existing Target Field Station in Minneapolis, portions of the proposed light rail alignment will be located within or adjacent to a combination of three active existing freight rail corridors (refer to Exhibit 4.4-1 in Section 4.4), as well as portions of the regional trail system, including the Cedar Lake LRT Regional Trail, Kenilworth Trail, and Cedar Lake Trail. In addition, throughout the proposed light rail alignment, the Project interacts with portions of the local trail

⁴⁰ U.S. Department of Justice Americans with Disabilities Act (ADA) Standards for Accessible Design; US Department of Transportation ADA Standards for Transportation Facilities

⁴¹ This guide includes horizontal curve standards for shared use paths. Following these standards allows for safe two-way bicycle use.

systems. See Section 4.5.2.2 for information about affected trail ownership and Section 4(f) eligibility for regional and local trails.

All existing public regional and local trails that will be relocated by the Project will be replaced with similar facilities⁴² that will provide the same transportation connectivity. Trail relocation generally involves shifting portions of a trail within its existing right-of-way, either along a roadway or within HCRRRA right-of-way, in order to provide space for Project elements (see Appendix E for specific locations). The Project will not result in adverse impacts as a result of public trail relocation.

In some cases, these trail relocations include the addition of grade-separation where a trail crosses a roadway under existing conditions. Locations where grade separation is added as part of the Project include:

- Cedar Lake Regional LRT Trail under Blake Road
- Cedar Lake Regional LRT Trail under Wooddale Avenue
- Cedar Lake Regional LRT Trail over Beltline Avenue

Trail and Station Area Conflicts

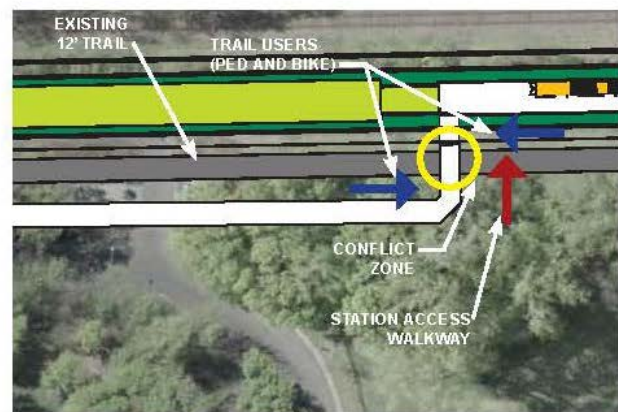
In areas where the proposed light rail alignment will follow an existing trail alignment, portions of the existing trail network have clearly marked separation for bicyclists and pedestrians, either by pavement marking or landscaped buffer. In areas where the trails are unmarked, pedestrians and bicyclists usually “keep right” and pass on the left. In addition, due to the limited-access nature of the trails, all of these trail users are currently traveling in parallel, so it is unlikely for a bicyclist to encounter a pedestrian crossing their path, or vice versa. In locations where the station platform is proposed to be adjacent to the existing trail, conflicting movements will be introduced (i.e., pedestrian/bicycle conflicts). Exhibit 4.5-4 illustrates the existing conditions and conflicts that are introduced at an example station.

EXHIBIT 4.5-4

Example Conflict Area – West Lake Station



EXISTING CONDITIONS



EXAMPLE CONFLICT AREA: WESTLAKE STATION

Transit users will cross through traffic (e.g., pedestrians and bicyclists) on the trail to access parking lots, sidewalks, or bus facilities or will connect to trails directly from station platforms at the following stations:

- Shady Oak Station
- Downtown Hopkins Station
- Blake Station
- Louisiana Station
- Wooddale Station

⁴² As a result of the project, approximately a 1/2 mile of the Minnesota River Bluffs Regional Trail between K-Tel Drive and 11th Avenue South will be converted from unpaved to paved surface, and the boundary between the Minnesota River Bluffs Regional Trail and the Cedar Lake LRT Regional Trail will be shifted a 1/2 mile west.

- Beltline Station
- West Lake Station
- 21st Street Station
- Penn Station
- Van White Station

Wayfinding, regulatory and warning signage, and markings of trail intersections will be included in the Project to address these conflicting movements. A clearly defined through route will be identified for bicyclists in areas where the trail travels through a plaza or large paved area, either with pavement markings or distinctive pavement. Therefore, the Project will not result in an adverse long-term direct impact to the existing pedestrian and bicycle network at these locations.

Kenilworth Trail Widths

In select locations along the Kenilworth Trail,⁴³ the existing bicycle trail will be reconstructed as part of the Project. The bicycle trail width will be narrower than the existing trail width and, in some cases, multiple bicycle trails will be combined into one trail. In general, this reduction in trail width is designed to minimize impacts to private or other property (see Section 3.4) and/or trees/vegetation along the corridor (see Section 3.6).⁴⁴ Note this trail is not a Section 4(f) resource (see Section 4.5.2.2 for information about affected trail ownership and Section 4(f) eligibility).

Table 4.5-4 summarizes the changes in trail widths and separation to the Kenilworth Trail under the Project, as well as hourly bicycle volumes collected on a fall weekday. The information in this table was used to calculate a Shared Use Path LOS for various points along the Kenilworth Trail using the FHWA methodology described in Section 4.5.1. The analysis is based on existing bicycle volumes. According to FHWA methodology, a bicycle LOS of C or better is generally considered acceptable. The proposed changes resulting from the Project will result in operations along the trail at LOS B or better. While there are no specific forecasts available for changes in bicycle volumes, demand may increase between opening year (2020) and 2040. Based on this analysis, the trail at its proposed width could accommodate bicycle volumes up to 400 percent greater than existing volumes before operations were reduced to LOS D.

Displacement of Private Trails

Table 4.5-3 lists the existing private trails that will be displaced by the Project. Replacement of these trails will be at the discretion of the property owner, to be determined through the property acquisition process. Two of these trails would not have provided direct access to a proposed light rail station, and their removal is not considered adverse.

However, the private trail between Flying Cloud Drive and West 70th Street would have provided a direct pedestrian and bicycle connection from Flying Cloud Drive to the Golden Triangle Station if it were not removed to accommodate the light rail alignment. This trail is not being replaced as part of the Project. In the absence of this trail, an alternative bicycle route to access the station through a nearby parking lot will result in a ½-mile longer trip. In addition, without this trail, an alternative pedestrian route with either a sidewalk or trail will not be available. Pedestrians seeking to access the station from Flying Cloud Drive would most likely walk in the drive aisle of a nearby parking lot to access the station. Therefore, the Project will result in an adverse long-term direct impact to the existing pedestrian and bicycle network at this location.

⁴³ The Kenilworth Trail connects the Midtown Greenway, Cedar Lake Regional LRT Trail, and the Cedar Lake Trail. It passes through the 21st Street and Penn Station areas.

⁴⁴ Trail widths in the Project are consistent with guidance provided by MPRB in their comments on the Draft EIS for this project.

TABLE 4.5-4

Kenilworth Trail Widths and Level of Service⁴⁵

Location	Hourly One-way Bicycle Volume ^a	Existing Width	Existing LOS ^b	Width with Project	LOS with Project
Kenilworth Trail at Penn Ave station	105	Two one-way bicycle trails – 10 feet wide each	A	One two-way bicycle trail – 16 feet wide	B
Kenilworth Trail ¼ mile west of the Penn Ave station	105	Two one-way bicycle trails – 9 feet wide each	A	One two-way bicycle trail – 16 feet wide	B
Kenilworth Trail 500 feet north of 21st St	105	Two one-way bicycle trails – 9 feet wide each	A	One two-way bicycle trail – 14 feet wide	B
Kenilworth Trail north of 21st Street	105	Two one-way bicycle trails – 10 feet wide each	A	One two-way bicycle and pedestrian combined trail – 16 feet wide	B
Kenilworth Trail at 21st St station	105	Two one-way bicycle trails – 10 feet wide each	A	One two-way bicycle trail – 14 feet wide	B
Kenilworth Trail under Burnham Rd	105	Two one-way bicycle trails – 9 feet wide each	A	One two-way bicycle trail – 14 feet wide	B

^a Volumes obtained from City of Minneapolis, 2015.^b LOS = Level of Service (see Section 4.5.1 for methodology).

Source: Metropolitan Council, 2015.

4.5.3.2 Long-term Indirect Pedestrian and Bicycle Impacts

The Project will result in long-term indirect impacts to pedestrian and bicycle facilities and travel patterns. Generally, the introduction of light rail transit into a transportation system results in increased pedestrian and bicycle activity as some light rail users walk or bike to access the new light rail stations.⁴⁶ In this manner, the Project is likely to create additional demand for pedestrian and bicycle facilities. Over time, this could result in the need for new or expanded pedestrian and bicycle facilities, in order to provide adequate non-motorized access to proposed light rail stations.

This increased demand for pedestrian and bicycle facilities would be concentrated around the stations. In particular, the Project will increase pedestrian and bicycle demand along the Cedar Lake LRT Regional Trail, the Kenilworth Trail, and the Cedar Lake Trail where the stations are immediately adjacent to the existing trail facility. Biking and walking trips to these stations may use this existing trail to access the stations. Over time, additional capacity may be needed on these trails to address this demand.

4.5.3.3 Short-term Direct and Indirect Pedestrian and Bicycle Impacts

The construction of the Project will result in short-term direct and indirect changes to the pedestrian and bicycle facilities.⁴⁷ Potential direct short-term impacts include intersection modifications, reconstruction of freight rail crossings, and trail and sidewalk detours. Potential indirect short-term changes include reduced pedestrian and bicycle volumes on existing facilities. This analysis assumes that, where appropriate, pedestrian and bicycle facilities will be maintained during construction in one of the following ways:

⁴⁵ Federal Highway Administration, Shared Use Path Level of Service Calculator, 2006.

⁴⁶ Based on travel demand forecasts for an average weekday in 2040 (see Section 4.1), 51 percent of passengers will access the Project's light rail stations by walking or biking, and 69 percent of departures from the Project's light rail stations by walking or biking, generating over approximately 30,000 new one-way walking or biking trips. The travel demand forecasts do not distinguish between walking and biking trips.

⁴⁷ The inclusion of the LRCIs in the project does not result in any unique short-term direct impacts. They do increase the number or duration of the already expected short-term direct impacts discussed in this section. There will be additional trail and/or sidewalk detours due to the construction of the LRCIs.

- **Trail detour route.** A signed route along other trails or roadways that provides a bicycle and pedestrian connection around an obstruction of the existing trail. Bicycle connections could be on another trail or on an existing street (with or without bike lanes). Pedestrian connections could be on another trail or on a sidewalk along an existing street.
- **Trail detour facility.** A temporary trail facility built to re-route bicycle and pedestrian traffic around an obstruction, usually located close to the existing trail.
- **Sidewalk detour route.** A signed route that provides pedestrian access to an area where access currently exists via another nearby sidewalk, frequently on the opposite side of a roadway. Where feasible, these temporary facilities will be as ADA compliant as the existing facilities.⁴⁸
- **Sidewalk detour facility.** A temporary paved facility built to re-route pedestrian traffic in areas where another nearby sidewalk does not exist. Where feasible, these temporary facilities will be as ADA compliant as the existing facilities.⁴⁹

During the normal course of construction, some existing trails and sidewalks will be obstructed by construction activity, in which case a detour route or facility will be provided prior to construction activity. An exception to this is an unforeseen safety issue during construction that would obstruct the trail or sidewalk and necessitate an immediate, short term closure. In this case, the trail or sidewalk may be closed and remain closed for five days or less without an available detour route or facility.

Detour routes and facilities are applicable to the following features of the existing pedestrian and bicycle environment: regional trails, freight rail crossings, sidewalks and trails along roadways, and intersection crosswalks. The short-term effects and efforts to minimize or avoid short term impacts to each of these features are described below.

Regional Trails

The Project's proposed light rail alignment will generally be located parallel and adjacent to with the regional trail system throughout much of the corridor between the Shady Oak and Royalston stations. As noted above, these are not Section 4(f) resources. The trails in this area carry heavy bicycle and pedestrian traffic and serve as a major bicycle commuter route, with volumes approaching 200 bicycle trips per hour during weekday peak periods. There are also a number of popular destinations along the trails, which serve to further increase bicycle and pedestrian volumes on nearby trail segments. As a result of the Project, the trails will be reconstructed parallel to their existing alignment. There are three trail detours of note in this area:

- In Minnetonka, Hopkins, and Saint Louis Park, the Minnesota River Bluffs Regional Trail and the Cedar Lake LRT Regional Trail will be maintained on temporary detour facilities within the exiting right-of-way for portions of the construction period. Construction of the Project will be phased in such a way that a paved surface⁵⁰ will be maintained for use by pedestrians and bicyclists proximate to the existing trail. At the trail crossings of Minnehaha Creek and Louisiana Avenue, trail and freight bridge construction will be phased such that a bridge will be available for pedestrian and bicycle usage during construction.
- In Minneapolis, the Kenilworth Trail will be maintained on detour routes on roadways surrounding the trail. The roadways in this area are predominantly low speed, low volume residential roads with sidewalks.

⁴⁸ Sidewalk detour routes and facilities will comply with the Minnesota MUTCD, which requires a Temporary Pedestrian Access Route (TPAR) for construction zones. These state requirements go beyond those in the Federal MUTCD, and address ADA compliance. Construction specifications provided to the contractor will include special provisions referencing MnDOT TPAR requirements for accessibility.

⁴⁹ Source: City of Minneapolis, 2014.

⁵⁰ Exception: the Minnesota River Bluffs Trail between 11th Avenue and Shady Oak Road is currently an unpaved, crushed aggregate trail. Connectivity of this trail segment may be maintained on a similar, unpaved surface.

- In Minneapolis, the Cedar Lake Trail crossing of Glenwood Avenue may be maintained in the corridor or on roadways surrounding the trail. Many of the roadways in this area have existing bicycle lanes and all have sidewalks.

As a result, short-term impacts to the regional trails will be minimized and/or avoided.

Sidewalks and Trails along Roadways

Over the course of construction, some sidewalks and trails along roadways will become obstructed. As described above, detour routes or facilities will be provided to provide temporary access around these areas, where appropriate. In these cases, pedestrian detour routes frequently take advantage of the sidewalk or trail on the opposite side of the roadway, utilizing a marked crosswalk at an intersection to make the transition. On roadways where a sidewalk obstruction may occur on both sides of the roadway, construction will be staged such that only one side is detoured at a time. In cases where there is not an existing facility on the other side of the roadway, or the path to that facility results in an excessively long walk, temporary detour facilities may be constructed. Trails along roadways frequently only exist on one side, so bicycle detour routes may involve the use of shared travel lanes. These routes would be appropriately signed to warn motor vehicle traffic of the increased likelihood of encountering bicyclists. As a result, short-term impacts to sidewalks and trails along roadways will be minimized and/or avoided.

Freight Rail Crossings

There are several locations where the proposed light rail alignment will cross major roadways. In many cases, sidewalks and trails along those roadways (or the roadways themselves) provide the only means within reasonable walking distance for pedestrians and bicyclists to cross the existing freight rail lines. During construction, pedestrians' and bicyclists' ability to use these routes to cross the existing freight rail lines may be limited. The complete detour of these routes (e.g., diverting traffic from Wooddale Avenue to Beltline Boulevard) would result in an unreasonable increase in travel time for pedestrians and bicyclists. These existing freight rail crossings occur at the following locations:

- Excelsior Boulevard at Jackson Avenue
- Blake Road at the proposed Blake Station
- Louisiana Avenue at the proposed Louisiana Station
- Wooddale Avenue at the proposed Wooddale Station
- Beltline Boulevard at the proposed Beltline Station
- Cedar Lake Parkway at Burnham Road
- 21st Street at the proposed 21st Street Station

Two existing grade separated freight rail crossings would also be affected by construction of the Project. These two freight rail crossings occur at the following locations:

- West Lake Street bridge, north of the proposed West Lake Station
- Glenwood Avenue bridge, south of the proposed Royalston Station

The Council will develop and implement a construction staging plan (staging plan), which will be coordinated with the appropriate jurisdictions and railroads, and the contractor will be required to secure the necessary permits and follow the staging plan, unless otherwise approved. As part of the staging plan, construction activities at freight rail crossings will be phased so that at least one sidewalk or trail will remain open across the freight rail tracks to maintain pedestrian access. Similarly, a trail will remain open, or a temporary trail provided across the freight rail tracks to maintain bicycle access.

Pedestrian and Bicycle Undercrossings

Near the Opus station in Minnetonka, there is an isolated network of trails that connects various office buildings and tends to have grade-separated crossings from the one-way circulator roads. The circulator roads lack sidewalks. As a result, using these roadways for pedestrian and bicycle detour routes may prove challenging. Bicycle and pedestrian undercrossings will be constructed or modified at three locations around the Opus station, including:

- The proposed light rail alignment between Red Circle Drive and Bren Road East, south of the proposed Opus Station
- Bren Road East and Red Circle Drive, south of the proposed Opus Station
- The proposed light rail alignment, between Bren Road and Smetana Road

These trails will either remain open or detour facilities will be constructed adjacent to the existing trail during construction. As a result, short-term impacts to pedestrian and bicycle undercrossings will be minimized and/or avoided.

Intersection Crosswalks

There are several locations where existing crosswalks will be replaced or reconfigured to accommodate road and sidewalk/trail improvements in the vicinity of the stations (see Appendix E for illustrations of those locations). In these locations, pedestrian traffic may be temporarily detoured to other crosswalks either at the same intersection or another nearby location. Construction specifications provided to the contractor will include special provisions referencing MnDOT Temporary Pedestrian Access Route (TPAR) requirements for crosswalk detours such that access to existing destinations is maintained and accessible.

4.5.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term pedestrian and bicycle impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Section 4.5.2 for additional information on the identified pedestrian and bicycle resource impacts and avoidance measures).

4.5.4.1 Long-term Mitigation Measures

Impact. Removal of private trail between Flying Cloud Drive and West 70th Street.

Mitigation. Any measures to address the removal of the trail (e.g., replacement of the trail) will be determined by the property owner as part of the Project's property acquisition process. Private property will be acquired by the Council in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (see Section 3.4.4).

4.5.4.2 Short-term Mitigation Measures

Impact. Potential short-term closure of a sidewalk, trail, or roadway (typically up to approximately three to five days), during which detour routes or facilities may not be provided.

Mitigation. Mitigation strategies to be taken in the event of temporary closures are identified in the Construction Mitigation Plan, which includes a Construction Communication Plan and staging plan for implementation by the Council prior to and during construction. The purpose of the Construction Communication Plan is to prepare project-area residents, businesses, and commuters for construction; listen to their concerns; and develop plans to minimize disruptive effects. Strategies may include:

- Issuing and distributing regular construction updates
- Providing advance notice of roadway closures, driveway closures, and utility shutoffs
- Conducting public meetings
- Establishing a 24-hour construction hotline
- Preparing materials with information about construction
- Addressing property access issues
- Assigning staff to serve as liaisons between the public and contractors during construction

4.6 Safety and Security

This section describes long-term direct and indirect and short-term (construction) direct and indirect effects of the Project on safety and security (see Sections 3.17 for cumulative impacts). This section includes an overview of the regulatory context and methodology used for the analysis, an assessment of existing conditions related to safety and security, a description of the anticipated impacts related to the Project, and a description of mitigation measures to implement with the Project.

4.6.1 Regulatory Context and Methodology

This section summarizes the regulatory context and methodology related to the assessment of safety and security under the Project.

4.6.1.1 Light Rail

The Council, as the owner and operator of the Southwest LRT Project, follows safety and security policies that establish minimum requirements for facilities based on local, state, and federal codes or standards; the Council's guidance; and the *Safety and Security Management Plan* (SSMP) for the Project. These codes, standards, and guidance include, but are not limited to, the applicable parts of:

- The National Fire Protection Association 130, Standard for Fixed Guideway Transit or Passenger Rail Systems
- International Fire Code, 2012 Edition, as amended
- The 2015 Minnesota State Building Code, as amended by the Cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis
- The National Fire Protection Association 101 Life Safety Code as well as ISO standards
- American National Standards Institute and American Society for Testing and Materials Standards
- 49 CFR Parts 214, 219 220, 222, 225, 228, 233, 234, 235, and 236, and 49 CFR § 229.125
- Minnesota Chapter 312 (HF 3172/SF 2785), Section 299A.017, "State Safety Oversight" establishes an Office of State Safety Oversight in the Department of Public Safety for safety oversight of rail fixed guideway public transportation systems within the state of Minnesota.
- 49 CFR Part 674, State Safety Oversight Final Rule.
- Circular C5800.1, *Safety and Security Guidance for Recipients with Major Capital Projects*, governing the safety and security process from planning through commencement of revenue service
- Metropolitan Council's *Regional Transitway Guidelines* (2012a), *Station and Support Facility Design Guidelines User Guide Supplement* (2012b), and *Metro Light Rail Transit Design Criteria* (Council, 2015), which provide technical guidance for the design of transitway facilities
- Metro Transit's SSMP for the Project (refer to Appendix C for instructions on how to access this document), which covers safety and security requirements and actions during operation of the Project

4.6.1.2 Freight Rail

The Secretary of Transportation has authority over all areas of railroad transportation safety (federal railroad safety laws, principally 49 U.S.C. chapters 201–213), and delegates this authority to the Federal Railroad Administration (FRA) under 49 CFR 1.89. In October 2014, the FRA provided a safety jurisdiction determination for the proposed Project in its regulatory role over the implementation of the proposed light rail at-grade crossings of roadways in the vicinity of existing freight rail at-grade crossings (see Appendix E for the Preliminary Engineering Plans showing the shared highway-rail grade crossings). In that safety jurisdiction determination, FRA concluded that the proposed Southwest LRT Project will be an urban rapid transit (URT) operation and, therefore, FRA will exercise its safety jurisdiction and regulations over the five

shared highway-rail grade crossings for the Project.⁵¹ Regulation over the safety of freight rail operations are outside of the jurisdiction of the Council and FTA; FRA safety jurisdiction applies to the five shared highway-rail grade crossings.

The study area for the safety and security evaluation includes planned facilities within the limits of disturbance for the Project, as illustrated in the Project's Preliminary Engineering Plans (see Appendix E).

4.6.2 Affected Environment

This section describes the existing conditions of the study area, including an overview of existing freight rail crossings and a summary of existing emergency service providers in the study area.

4.6.2.1 Emergency Service Providers

Public safety and security within the study area is provided by the police departments, fire departments, and emergency response units of the Cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis. Emergency medical services are located in each city. Through the municipal police and fire departments, each community within the affected area has developed an Emergency Operations Plan for all types of emergencies. In addition, Three Rivers Park District Department of Public Safety and Minneapolis Park and Recreation Board Police Department are the law enforcement agencies responsible for providing a safe environment on the regional trails within the study area, such as the Cedar Lake LRT Regional Trail and the Kenilworth Trail.

4.6.2.2 Transit Service and Facilities

Within the safety and security study area, Metro Transit and SouthWest Transit provide safety and security services for their respective bus service and facilities, which are described in Section 4.1. In particular, Metro Transit has its own licensed police force, which is made up of approximately 110 full-time officers, 90 part-time officers, four community service officers and five administrative staff. Metro Transit also has an extensive community service officer (CSO) program. CSOs are studying law enforcement but are not yet sworn officers. These future licensed officers monitor closed-circuit TV and assist with traffic and crowd control.

4.6.2.3 Freight Railroads

There are currently four active freight rail corridors in the study area: the Bass Lake Spur, the Kenilworth Corridor, the Wayzata Subdivision, and the MN&S Spur. The fourth freight rail line, the MN&S Spur, intersects the Bass Lake Spur within the study area (refer to Section 4.4.3 for more information on existing freight rail operations). There are three freight rail owners/operators: Canadian Pacific Railway; BNSF Railway; and Twin Cities and Western Railroad (see Section 4.4.2.4 for additional information on these freight rail owners/operators). In addition, HCRRA is the current owner of the Kenilworth Corridor, which includes existing freight rail tracks (see Section 4.4.2.3 for additional information on HCRRA). Final ownership of these rights-of-way will be determined as the Project advances, but it is likely that portions of the railroad corridors will be transferred to public ownership, with continued operating rights for the railroads that currently operate in the area (see Section 2.1.1.3 for additional detail). Responsibility for compliance with freight rail operational and safety regulations will be the responsibility of the railroad owner or operator. Ownership of the freight rail infrastructure and right of way will be determined as part of the acquisition process and subsequent agreements.

As part of the Project, changes to existing freight rail infrastructure will be required within the Bass Lake Spur, Kenilworth Corridor, and the Wayzata Subdivision in order to accommodate the proposed light rail alignment. See section 4.6.3.1 for additional information. The design and operations of the shared highway-rail grade crossings subject to FRA's safety jurisdiction will be subject to FRA regulations, including 49 CFR Parts 214, 219, 220, 222, 225, 228, 233, 234, 235, and 236, and 49 CFR § 229.125, as well as the hours of

⁵¹ Refer to Appendix N for a copy of correspondence between the Council and FRA regarding FRA's safety jurisdiction determination and a description of the five shared highway-rail grade crossings.

service laws, at the points of connection between the Project and the general railroad system.⁵² According to Minnesota Chapter 312 (HF 3172/SF 2785) with respect to freight railroads in Minnesota, MnDOT has oversight responsibilities for freight railroad infrastructure including at-grade roadway crossings and the Minnesota Department of Public Safety has responsibilities to work with freight railroad companies to develop safety protocols with local public agencies, assist local governments with including emergency response information in local plans, and to participate in and monitor emergency response training and preparedness. The FRA and State of Minnesota's jurisdiction applies only to the shared at-grade light rail/freight rail roadway crossings included in the Project (see Section 4.4.2.2 for more information). There are nine existing locations within the study area where either roadways or multiuse trails cross freight railroads; see Table 4.6-1 for the locations of these existing at-grade crossings.

In addition, in March 2016, FTA issued a final rule for state safety oversight of rail fixed guideway public transportation systems not regulated by the FRA (49 CFR Part 674). This final rule replaces existing regulations and significantly strengthens state safety oversight agency (SSOA) authority to prevent and mitigate accidents and incidents on rail transit systems to help ensure the safety of riders and workers. Under this final rule, each SSOA is required to have the enforcement authority, legal independence and financial and human resources for overseeing the rail transit agencies within their jurisdiction. In addition, SSOAs must train and certify personnel responsible for performing safety oversight activities and will continue to conduct triennial audits of the safety programs established by each rail transit system. States have three years from the effective date of the final rule to implement an approved State Safety Oversight Program. All Metro Transit LRT lines fall under the jurisdiction of the Minnesota SSOA, which is part of the Minnesota Department of Public Safety, and are governed by 49 CFR, Part 659.

4.6.3 Environmental Consequences

This section identifies the long-term and short-term direct impacts on safety and security from the Project.

4.6.3.1 Long-term Direct Impacts on Safety and Security

This section describes proposed design elements and other measures to increase safety and security that will be implemented as part of the Project. The following safety and security related topics are addressed in this section: modifications to existing freight rail facilities to accommodate light rail; light rail stations and other facilities; new at-grade light rail crossings; emergency vehicle access and response times; light rail service in the vicinity of freight rail; and light rail tunnel safety.

Modifications to Existing Freight Rail Facilities

The Project will include modifications to freight rail facilities to accommodate the introduction of light rail facilities, including shifting the realignment and reconstruction of freight railroad track, the placement of light rail tracks in relatively close proximity to freight rail tracks, and several shared at-grade light rail and freight railroad crossings of roadways or trails (that are currently only freight rail crossings); removing the northern leg of the existing Skunk Hollow switching wye between the Bass Lake Spur and the MN&S Spur and construction of a new connection; modifications to the freight rail alignment in the Kenilworth Corridor to accommodate the proposed light rail tunnel, at-grade sections of light rail tracks, and light rail stations; and modifications to the freight rail alignment in the Wayzata Subdivision to accommodate the light rail tracks and light rail stations. Refer to Sections 4.4.4.1 and 2.1.1.3 for a detailed description of the freight rail infrastructure modifications included in the Project. Freight rail modifications are also illustrated in Exhibit 2.1-5.

As described in the *Metro Light Rail Transit Design Criteria* (Council, 2015), the design of freight rail facilities and elements that interface with freight rail facilities will comply with applicable safety design standards including the Manual for Railway Engineering, American Railway Engineering and Maintenance of Way Association (AREMA) and other owner/operator railroad standards and guidelines, where appropriate.

⁵² The Council may petition FRA's Safety Board for a waiver of those regulations under the procedures set forth in 49 CFR Part 211.

Light Rail Stations and Other Facilities

The Project is being developed to conform to FTA's Rail Fixed Guideway Systems; State Safety Oversight Program for Safety and Security Guidance for Recipients with Major Capital Projects (Circular C 5800.1), covered under 49 CFR Part 633 – Project Management Oversight. The Project will be designed to meet the following minimum objectives, in accordance with FTA guidance:

- Design for the identification, minimization, and elimination of hazards through the use of appropriate safety design concepts and/or alternative designs
- Use of fixed, automatic, or other protective safety devices, such as warning signals and devices to control hazards that cannot be eliminated
- Provide special procedures for hazards that cannot be minimized by the aforementioned devices

The Project will apply safety and security measures (e.g., station area security/crime, bicycle and pedestrian security) through the implementation of the Project's SSMP (Council, 2014) and the *Metro Light Rail Transit Design Criteria* (Council, 2015). The purpose of the SSMP is to document how Metro Transit will integrate safety and security into the Project. The plan covers requirements for safety and security design criteria, hazard analyses, threat and vulnerability analyses, construction safety and security, operational staff training, and emergency response measures. These plans and programs also specify actions and requirements of Metro Transit Police to maintain safety and security during Project phases. The purpose of the *Metro Light Rail Transit Design Criteria* (Council, 2015) is to establish basic design criteria to be used in the design of the Metro Transit's LRT system. The design criteria include design standards and specifications to provide security and/or enhance safety, such as guidance on fire and life safety protocols, track geometry and trackwork, station design, tunnel design, traffic engineering, and structural engineering.

In coordination with the Project's SSMP and the *Metro Light Rail Transit Design Criteria*, station areas will be designed to include best practices for safety and security, including lighting, emergency equipment, public address systems, video cameras, emergency telephones, and closed circuit television. The public address system, with both speakers and signs, will convey information to people with disabilities in compliance with ADA requirements. Lighting for proposed station areas and park-and-ride lots, as well as vehicular and pedestrian circulation areas, will be consistent with the *Metro Light Rail Transit Design Criteria* (Council, 2015). Emergency lighting will be provided in all public areas, including platforms, pedestrian facilities, vehicular traffic areas, bus loading zones, and park-and-ride lots. Fencing and railings will be designed for fall protection near substantial grade changes and for locations susceptible to pedestrian or bicycle encroachments onto the light rail tracks. Where possible, fencing will be located in the vicinity of at-grade trail or sidewalk crossings, in station areas, and between the light rail alignment or freight rail alignment when adjacent to a trail or sidewalk. The proposed Hopkins OMF will be secured by perimeter fencing to eliminate hazards that could cause risk to the public.

Safety and security within the proposed light rail right-of-way will be the joint responsibility of Metro Transit Police, and local law enforcement authorities. Metro Transit has its own licensed police force to address public safety on and near the transit system. Transit police will routinely patrol the proposed stations and LRT alignment, as well as nearby bus routes and bus stops. Transit police officers will provide security at light rail stations and in the light rail vehicles.

As the project progresses through construction and into integrated testing and revenue operations, the Light Rail Transit Fire Life Safety and Security Committee (LRT FLSSC), as described in the Project's SSMP (Council, 2014), will participate in the planning, performance and evaluation of emergency simulation on the system. The LRT FLSSC is a standing agency-wide committee with membership from local and county police and fire departments and other participating organizations. The LRT FLSSC provides input to and comments on the fire protection, emergency preparedness plans and procedures, safety plans, and security plans. These exercises will include discussion based (tabletop) drills, familiarization exercises, and operations-based (full-scale) exercises. After each training exercise, formal reviews and lessons learned will be incorporated into improvements in incident response and resolution procedures. These results will be tracked through

corrective actions plans that will be submitted to the Minnesota State Safety Oversight Agency and updated monthly.

To address adequate emergency vehicle access to restricted or elevated locations on the project, the Council will coordinate with emergency services providers by providing them with access routes and locations that will avoid the potential for emergency response delay. Additional coordination will occur through the LRT FLSSC. Many restricted or elevated locations on the project will be accessed from surrounding roadways or adjacent properties. In some locations such as light rail bridges over Prairie Center Drive, Valley View Road, Nine Mile Creek, Shady Oak Road and Highway 212, and the Minnetonka/Hopkins bridge (south of Shady Oak Station), or where light rail is located on retaining walls near the City West Station, access may be from surrounding properties or via emergency response access points on either end of the elevated areas. At other locations such as in the Kenilworth Corridor, adequate trail width for emergency vehicle access will be provided, including the trail bridge over the Kenilworth Channel. Discussions have also included confirming fire hydrant locations.

At-Grade LRT Crossings

As shown in Table 4.6-1, 14 new LRT crossings at-grade with existing roadways will be introduced as part of the Project. Light rail vehicles will sound horns or bells when entering a station and when approaching at-grade roadway crossings, except in locations where a quiet zone is implemented.⁵³ In quiet zone locations, additional safety measures (e.g., non-traversable medians), will be installed in accordance with the Quiet Zone Final Rule (49 CFR Part 222). See Section 4.2 for more information on roadways and Section 4.4 for more information on freight rail. The Project will also include one new light rail crossing at-grade with a multiuse trail. The trail crossing of light rail will be joined together with the station access sidewalk located at the end of the Penn Station platform. At-grade light rail crossings of sidewalks and multiuse trails have been designed based on the *Metro Light Rail Transit Design Criteria* (Council, 2015) and will include flashing light signals with an audible warning to notify pedestrians of a train's arrival and detectable warnings and signs. Refer to Section 4.5 for more information on pedestrian and bicycle facilities. Controls for all at-grade crossings are shown in Table 4.6-1.

Under the Project, there will be six shared light rail and freight railroad at-grade crossings. Five of the shared at-grade crossings will be of roadways and one will be of a trail, as noted above. Proposed controls for all new or modified crossings are shown in Table 4.6.1. In some cases, the roadway crossings will include crossings for sidewalks and trails. In these locations, the crossings and controls will be designed to promote pedestrian and bicycle safety and will include space between the freight tracks and the light rail tracks to allow sidewalk and trail users to have shelter space in the event of a freight and light rail train passing simultaneously. In addition, these crossings will be equipped with detectable warnings and fences lining the crossing paths to bring attention to the freight or light rail crossing locations. The design details of pedestrian and bicycle safety features will be made during Engineering and finalized prior to construction.

Emergency Vehicle Access and Response Times

Under the Project, emergency vehicle access to properties and areas within the vicinity of the Project will be maintained (except where the Council will fully acquire a parcel, thereby eliminating the need for access). In particular, access via public roadways will be maintained by providing either at-grade, above-grade, or below-grade light rail crossings of roadways. In the few areas where existing roadway connections or driveways to properties will be affected by the Project, alternate roadway connections or driveways will be provided for continued emergency vehicle access (see Table 4.6-2). Emergency vehicle access to individual properties, except where the property will be fully acquired by the Council, will also be maintained under the

⁵³ Quiet zones are locations where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings. Horns are not routinely sounded in quiet zones, unless under an emergency situation. Bells are sounded in quiet zones. Municipalities must apply to FRA for approval of quiet zones.

TABLE 4.6-1

At-Grade Railroad Crossings (Existing Conditions and Project)^a

Location	Existing Conditions		Project	
	Crossing Type	Crossing Control ^b	Crossing Type	Crossing Control ^b
Redstone Driveway off Eden Road, Eden Rd, Eden Prairie	None	N/A	LRT	Flashing lights and gates
Technology Dr at Flying Cloud Dr, Eden Prairie	None	N/A	LRT	Flashing lights and gates
Viking Dr at Flying Cloud Dr, Eden Prairie	None	N/A	LRT	Flashing lights and gates
West 70th St, Eden Prairie	None	N/A	LRT	Flashing lights and gates
Bren Rd E/Red Circle Dr/Yellow Circle Dr, Minnetonka	None	N/A	LRT	Flashing lights and gates
Bren Rd West, Minnetonka	None	N/A	LRT	Flashing lights and gates
5th Street/K-Tel Dr, Hopkins	None	N/A	LRT	Flashing lights and gates
11th Ave S, Hopkins	None	N/A	LRT	Flashing lights and gates
8th Ave S, Hopkins	None	N/A	LRT	Flashing lights and gates
5th Ave S, Hopkins	Freight	Flashing lights	LRT and Freight	Flashing lights and gates
Monroe Ave S/Jackson Ave N/Excelsior Blvd, Hopkins	Freight	Flashing lights and gates, traffic signal	Freight	LRT on bridge; freight crossing same as existing
Blake Rd N, Hopkins	Freight	Flashing lights and gates	LRT and Freight	Flashing lights and gates
Wooddale Ave S, St. Louis Park	Freight	Flashing lights and gates	LRT and Freight	Flashing lights and gates
Beltline Blvd, St. Louis Park	Freight	Flashing lights and gates	LRT and Freight	Flashing lights and gates
Cedar Lake LRT Regional Trail, east of Beltline Blvd, St. Louis Park	Freight	At-grade with trail stop sign and pavement markings on trail	LRT and Freight	Grade separated with trail on bridge over LRT and freight
Cedar Lake Parkway, Minneapolis	Freight	Flashing lights	Freight	LRT in tunnel; freight crossing same as existing
21st St W, Minneapolis	Freight	Crossbucks and stop signs	LRT and Freight	Flashing lights and gates
Cedar Lake Trail just west of Penn Station, Minneapolis	Freight	Trail stop sign and pavement markings on trail	LRT and Freight	Flashing lights and pavement markings on trail; trail crossing of LRT at Penn Station platform
Glenwood Ave, Minneapolis	None	N/A	LRT	Flashing lights and gates
Royalston Ave, Minneapolis	None	N/A	LRT	Traffic signals

^a Includes both the existing conditions and the Project condition. For the Project, includes LRT only, freight only, and shared LRT/freight crossings.

^b Detectable warning devices and fencing may be provided at locations where sidewalks or trails will cross the LRT tracks. Design decisions will be made during Engineering and specific treatments will be determined prior to construction.

Note: N/A = not applicable.

Source: Council, 2015.

TABLE 4.6-2

Roadway and Driveway Access Changes

Roadway/Driveway Connection Affected	Alternate Connection
Redstone east driveway located along Eden Rd (Eden Prairie)	East driveway closed, west driveway shifts west approximately 160 feet
K-Tel Dr/5th St S (Minnetonka/Hopkins)	New roadway alignment/intersection approx. 115 feet northeast
Service Road between Beltline Blvd and Lynn Ave	Roadway being removed. Access to Monterey Ave via CSAH 25 and new Lynn Ave extension. Lynn Ave extended south and west to Monterey. Service Rd access to Lynn Ave east of Lynn Ave closed, but provisions for emergency access to Lynn Ave included.
Chowen Ave S/W 31st St/Abbott Ave S alignment (Minneapolis)	New roadway alignment creating W 31 st St shifts Abbott Ave S and Chowen Ave S south approx. 160 feet south

Source: Council, 2015.

Project: (1) either the existing vehicular access to a property will be maintained; or (2) alternate vehicular access will be provided where existing vehicular access to a property will be closed to accommodate the Project.

In locations where there will be at-grade light rail crossings of roadways, the potential exists for increases in emergency response time as a result of delay to emergency vehicles while LRVs are in the crossing. During the peak weekday hour, up to 12 light rail trains (six in each direction) will pass through these at-grade crossings, causing approximately 50 seconds of delay per light rail train crossing. Because approaching light rail vehicles will have a higher priority at at-grade crossings than approaching emergency vehicles (which is consistent with existing light rail at-grade crossings in the system), these delays could increase fire, emergency medical services, and police response times on routes using the crossings. To help avoid or minimize delays to emergency vehicles at proposed at-grade light rail crossings, the Council will coordinate with emergency services providers by providing them with and the identification of alternative crossing routes that will avoid the proposed at-grade light rail crossings and the potential for delay. Additional coordination will occur through the LRT FLSSC.

Light Rail Service in the Vicinity of Freight Rail Service

Between the proposed Shady Oak Station in Hopkins and the existing Target Field Station in Minneapolis, portions of the proposed light rail alignment will be located within a combination of three active existing freight rail lines and the light rail alignment will generally be located parallel to the existing freight railroad corridors (described and illustrated in Section 4.4.3). As previously described, the Council will implement the Project's SSMP (Council, 2014) and the Metro *Light Rail Transit Design Criteria* (Council, 2015), to provide and maintain safety and security during operation of the Project within the vicinity of existing freight rail service. The *Design Criteria*, which includes design standards and specifications to provide security and/or enhance safety, includes safeguards to prevent LRT operational derailments including guardrails (i.e., a rail or other structure laid parallel with the running rails of the track to keep derailed wheels adjacent to the running rails of the track to keep derailed wheels adjacent to the running rails). In addition, corridor protection barriers (i.e., commonly referred to as "crash walls") will be placed between the freight rail and light rail tracks. Corridor protection barriers are thick walls placed between freight rail and light rail tracks where either light rail or freight rail will be: 1) elevated above the adjacent tracks; or 2) the clearance between the centerline of the light rail tracks and the centerline of the freight tracks is less than 25 feet. In addition, where clearance between the centerline of the at-grade light rail tracks and the centerline of the at-grade freight tracks is less than 50 feet, intrusion detection for possible freight derailment will be installed.

The design of the Project will include safeguards in the catenary system for the Project to help minimize the possibility of sparking occurring in the overhead catenary wires. Electrical sparks, or arcing, occurs when there is a gap between the overhead contact wire and the vehicles pantograph. Numerous safeguards are included in the design of the Project to address and minimize electrical sparking. Ice cutters will be utilized to maintain positive contact between the contact wire and pantograph during winter weather. Additionally, Metro Transit will regularly inspect pantographs for grooves along the pantograph's carbon strip (as it does

on its existing light rail lines), which could cause arcing. Included in the design of the Project to minimize arcing are contact wire gradients, which meet or exceed AREMA recommendations, staggering or zig-zags of the contact wire to ensure even wear, and overlaps between power sections. Finally, the design accounts for the Occupational Safety and Health Administration (OSHA) 10-foot zone of influence, and meets or exceeds National Electrical Safety Code (NESC)⁵⁴ requirements along the proposed shared light rail and freight rail corridor.

Where the light rail alignment will be adjacent to a freight rail alignment, the light rail alignment will be primarily on segregated right-of-way. In accordance with the NESC, this right-of-way configuration allows for contact wire height above rails as low as 16-foot for normal operations, and lower where required to clear vertical obstructions. To further maximize the separation between the light rail catenary and the freight corridor, a typical normal design contact wire height for the LRT is 18 feet 6 inches.

The Council's Operations Emergency Management Plan (OEMP) for light rail was developed to assist in identifying, responding to, and resolving emergency situations in an efficient, controlled and coordinated manner for the Project. The OEMP establishes the response process and responsibilities for departments and staff within Metro Transit, as well as outside agencies in the event of a rail emergency.

In addition, the Council maintains an emergency preparedness exercise plan, in compliance with the SSMP. The emergency preparedness exercise plan identifies emergency preparedness exercises, which will be carried out by the LRT FLSSC. In advance of operation of the Project, a number of drills will be planned, conducted, and documented in the emergency preparedness exercise plan. Emergency preparedness training exercises will be designed to address areas such as rail equipment familiarization, situational awareness, passenger evacuation, coordination of functions, communications, and hands-on instruction. The LRT FLSSC will coordinate training exercises with the Council and the freight railroad owners and operators, as appropriate. During normal revenue service, the LRT FLSSC will coordinate training exercises with the Council and freight rail operators, as appropriate, to evaluate emergency preparedness. The exact nature of emergency preparedness exercises will be developed in coordination with the LRT FLSSC prior to construction, but could include one tabletop and one full-scale emergency preparedness exercise, annually.

Light Rail Tunnel Safety

There are two locations where the light rail alignment will be located within a shallow tunnel as part of the Project. This includes a tunnel under Highway 62, between City West Station in Eden Prairie and Opus Station in Minnetonka, and a shallow tunnel within the Kenilworth Corridor in Minneapolis, between West Lake Station and the crossing of the Kenilworth Lagoon. Refer to Section 2.1.1 for more information on the design of the proposed shallow tunnels and Appendix E for design drawings.

In order to maintain safety and to provide security within the shallow tunnels, the Council will follow the *Metro Light Rail Transit Design Criteria* (Council, 2015), including the following:

- Ventilation infrastructure, including emergency ventilation fans that would direct fresh air into selected areas and remove smoke from areas during an emergency
- Rail heaters and other climate control systems to avoid ice build-up on rails due to temperature gradient at tunnel entrance
- Passenger evacuation infrastructure, such as cross passages to the opposing tunnel direction (i.e., connecting the inbound and outbound sides of the tunnel) spaced mid-tunnel with fire rated doors (i.e., opposing direction of the tunnel will be separated by a concrete wall), one emergency walkway per half-tunnel, and egresses at tunnel portals
- Signs within the tunnel to identify the locations of passages and tunnel openings

⁵⁴ The NESC covers provisions for safeguarding persons from hazards arising from the installation, operation, or maintenance of electric supply and communication lines and equipment (<http://standards.ieee.org/about/nesc/index.html>).

- Closed circuit monitors at tunnel portals, phones and blue lights (i.e., emergency beacons that identify telephones), and radio system connections to the rail control center
- Intrusion detection at each tunnel portal
- Normal and emergency tunnel lighting

In addition, the Project will comply with National Fire Protection Association 130: Standard for Fixed Guideway Transit and Passenger Rail Systems (2014) and Circular C 5800.1, *Safety and Security Guidance for Recipients with Major Capital Projects*. These guidelines and standards address fire prevention, ventilation and fire protection, evacuation.

4.6.3.2 Short-term Impacts on Safety and Security

This section describes proposed measures to increase safety and security that will be implemented as part of the construction of the Project. The following safety and security related topics are addressed in this section: light rail construction safety and security; emergency vehicle access and response times; freight rail operations; and light rail tunnel construction.

Light Rail Construction Safety and Security

The construction of the Project will be a major undertaking that will require changes along the proposed light rail alignment for the duration of the construction period. Major construction is expected to span approximately three years. Staging of construction activities will be further evaluated and updated as the construction process and phasing is better defined during Engineering and will include provisions to maintain safety and security for staging areas. Refer to Section 2.1.1.2 for more information on construction activities.

Both federal OSHA and Minnesota OSHA standards for safety of construction site personnel will be maintained in order to minimize and/or avoid construction workers' injuries. In addition, all contractors will prepare a project safety and health program along with a site-specific safety plan to ensure that, while on the work site and construction activities, contractor and subcontractor personnel comply with the specified safety practices, codes, and regulations as described in the Project's SSMP. As appropriate, access to construction sites may be limited by fencing and security gates where practical to prevent inadvertent access by those without access clearance. Specific construction safety and security management activities are identified in the Project's SSMP, which will be incorporated into construction contract specifications.

Emergency Vehicle Access and Response Times

Construction activities will result in temporary increased congestion along adjacent roadways as a result of temporary lane and roadway closures, shifts in roadway alignments, and detours. This temporary increase in roadway congestion could affect access and response times for emergency service providers. However, provisions will be made to maintain required access during established periods or to keep one lane of traffic open on main arterials as described in the Construction Mitigation Plan (see Section 4.6.4).

Increased delay for emergency response vehicles during construction of the Project will be minimized through coordination with the affected authority having jurisdictions, which generally includes local and county police and fire departments. The Council will work with emergency service providers to provide the general schedule for construction activities and identify detour routes, thereby minimizing potential increases in delay for emergency response vehicles because emergency responders will be aware of alternate routes prior to dispatch and can avoid light rail crossings as needed. Further, access for emergency response vehicles to parks and trails will be maintained at all times during construction and operation of the Project in accordance with all relevant laws and standards, as appropriate. Additional coordination will occur through the LRT FLSSC.

Freight Rail Operations

As part of the Project, construction activities will occur close to active freight rail corridors. The Council will develop and implement a freight rail operations coordination plan that will be based on and coordinated with the Project's construction documents. During the Project's construction, the Council will continue to

work closely with the railways concerning railway coordination. The Council will adopt and use the safety and construction specifications and standards of the Class 1 Railways: Canadian Pacific Railway (CP) and BNSF Railway for the entire Project when construction is adjacent or on railways' rights-of-way, in addition to all applicable OSHA Construction and other Safety Regulations. The railways' safety and construction specifications and standards are very specific and rigorous in their intent and execution. In addition, contractors' personnel, project engineering staff, Metro Transit staff, and all other support staff working on or adjacent to the railways' rights-of-way will be required to have completed and possess valid FRA Rule 214 Roadway Worker Training Certification, e-RAILSAFE and BNSF Contractor Orientation Training. Railway flaggers will be used to control freight train movements through construction limits. Qualified inspectors will be used to assess the operational safety condition of the right of way prior to the movement of a train through areas of railway trackage that may be disturbed by excavating and excavations, pile driving, crane lifts and related activities that may impact the safety of the site and rail operations through the construction limits. Short-term freight operational impacts and mitigation are addressed in Section 4.4.

Light Rail Tunnel Construction

As shown in the *Kenilworth Shallow LRT Tunnel Basis of Design Report*, appropriate sheet piling and bracing will be designed to safely support the open excavation for light rail tunnel construction, as well as to support adjacent freight rail infrastructure. Other construction safeguards, such as horizontal and vertical movement and settlement monitoring of both existing freight rail infrastructure and light rail tunnel support of excavation, will be used as construction of the tunnel progresses. Monitoring data will be collected and analyzed by construction staff and coordinated with freight railroad operations staff to verify that safe freight rail operations can be maintained through the construction area at all times.

4.6.4 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Project's long-term and short-term Safety and Security impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address (see Sections 4.6.3.1 and 4.6.3.2 for additional information on the identified safety and security impacts and avoidance measures).⁵⁵

4.6.4.1 Long-term Mitigation Measures

Based on the analysis and incorporation of identified safety and security-related design and operational elements into the Project, the Project will not adversely impact safety and security within the study area. Key safety and security measures described above that will be implemented under the Project include: designing freight rail modifications to meet applicable safety design standards; adherence with the Project's SSMP and *Metro Light Rail Transit Design Criteria* when designing light rail facilities and at-grade light rail crossings; continued coordination with emergency responders, including the LRT FLSSC; design components related to the location of light rail service operating in the vicinity of freight rail service; and implementation of design and operational safety measures for the proposed light rail tunnels.

4.6.4.2 Short-term Mitigation Measures

Most short-term adverse impacts to safety and security will be avoided through the implementation of measures outlined in Section 4.6.3.2, including compliance with OSHA standards, continued coordination with freight rail operators, and the implementation of applicable sections of the Project's SSMP. The remaining impact is described and will be mitigated as follows:

Impact. Temporary delays in emergency response resulting from construction activities.

Mitigation. In order to mitigate temporary delays in emergency response resulting from construction activities, the Council developed a Construction Mitigation Plan, which includes a construction staging plan and a Construction Communications Plan. The construction staging plan identifies efficient detour routes; minimizes temporary lane, sidewalk, and trail closures; and addresses maintenance and timely removal of temporary traffic control devices. The Council will

⁵⁵ See Section 4.4 for additional information on freight rail operations and related mitigation measures.

coordinate with emergency service providers on required detour routes and lane closures in order to minimize increases in travel and response times.

5 Environmental Justice Compliance

This chapter describes the Southwest Light Rail Transit (LRT) Project's (the Project) compliance with applicable federal regulations for environmental justice (EJ) compliance. This chapter includes a review of the regulatory context and methodology; identification of minority and/or low-income populations (i.e., EJ populations); a description of opportunities provided to EJ populations to participate in the Southwest LRT Project planning process; an assessment of impacts that will affect EJ populations; and a project-wide EJ finding.

This chapter includes the following sections:

- 5.1 Regulatory Context and Methodology
- 5.2 Environmental Justice Populations
- 5.3 Public Involvement
- 5.4 Environmental Justice Analysis
- 5.5 Environmental Justice Finding

5.1 Regulatory Context and Methodology

The analyses presented in this chapter were prepared in compliance with the Presidential Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994); the U.S. Department of Transportation (USDOT) *Order to Address Environmental Justice in Minority Populations and Low-Income Populations* (USDOT Order 5610.2(a), May 2, 2012); and the Federal Transit Administration (FTA)'s Circular FTA C4703.1, Environmental Justice Policy Guidance for Federal Transit Administration Recipients (FTA, August 15, 2012).

As outlined in FTA Circular 4703.1, the USDOT and FTA are required to make EJ part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of programs, policies, and activities on minority populations and/or low-income populations (collectively "Environmental Justice populations"). FTA includes incorporation of EJ and non-discrimination principles into transportation planning and decision-making processes and project-specific environmental reviews.

Furthermore, USDOT Order 5610.2(a) sets forth the USDOT policy to consider EJ principles in all USDOT programs, policies, and activities. It describes how the objectives of EJ are integrated into planning and programming, rulemaking, and policy formulation. This chapter only addresses impacts to minority and low-income populations that will be caused by the Project, because the No Build Alternative would not directly or indirectly change existing conditions of the surrounding environment. Since publication of the Draft EIS, the methodology for this analysis has been updated for compliance with 2012 FTA Circular on Environmental Justice (FTA Circular 4703.1 August 2012). Changes in methodology since publication of the Draft Environmental Impact Statement (EIS) include a new basis of EJ impact definition and updated considerations for specific environmental categories.

5.1.1 Data Sources

Decennial Census data were used as a primary source for mapping and locating minority populations. The U.S. Census takes place every 10 years and is intended to account for every resident in the United States. The Census also collects information on homeownership, sex, age, race, and ethnicity. Year 2010 U.S. Census data were used to quantify minority populations at the block level, which is the smallest geographic unit for which race and ethnicity data are available. The information was obtained from the following dataset: 2010 Census, Summary File 100% Data, P9.

American Community Survey (ACS) 2009-2013 data were used as a primary source for identifying low-income populations. The ACS is an ongoing survey that provides data on age, sex, race, family and relationships, income and benefits, health insurance, education, veteran status, disabilities, where people work and how they get there, and where people live and how much people pay for essentials. The purpose of

the ACS is to provide an annual data set that enables communities, state governments, and federal programs to plan investments and services. ACS provides period estimates that describe the average characteristics of population and housing over a period of data collection. The ACS is administered continually and, unlike the Census, is a random sampling of people from all counties and county-equivalents in the United States. ACS 2009-2013 Five-Year Estimates were used to quantify low-income populations at the block group level, which is the smallest geographic unit for which low-income population data are available.

5.1.2 Method for Identifying Census Blocks or Block Groups

Census blocks or block groups were selected for inclusion in the EJ study area using the following methodology:

- The EJ study area was defined as being a half mile on either side of the proposed light rail alignment, a half-mile radius surrounding the center point of each of the proposed light rail stations, and a half-mile radius surrounding the center point of the proposed operations and maintenance facility (OMF) in the City of Hopkins.
- All Census blocks or block groups within the study area were included in the analysis.

All Census blocks and block groups lie entirely within Hennepin County, Minnesota.

5.1.3 Method for Identifying Minority Populations

As defined in *FTA Circular 4703.1*, minority populations are any readily identifiable group or groups of minority persons who live in geographic proximity and, if circumstances warrant, geographically dispersed or transient persons, such as migrant workers or Native Americans, who will be similarly affected by the proposed project. Minority population includes persons who are American Indian or Alaskan Native, Asian American, Native Hawaiian or Other Pacific Islander, African American (not of Hispanic Origin), and Hispanic or Latino. ACS data were used to identify Census blocks within the study area where there are minority residents.

5.1.4 Method for Identifying Low-Income Populations

As defined in *FTA Circular 4703.1*, a low-income person is one whose median household income is at or below the Department of Health and Human Services poverty guidelines. A low-income population is any readily identifiable group or groups of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed or transient persons who will be similarly affected by a proposed USDOT, program, policy, or activity. Similar to the identification of minority population areas, ACS data were used to identify Census block groups within the study area where there are residents meeting the Department of Health and Human Services poverty guidelines. This information was supplemented based on a review of each station area to determine the location of low-income housing within the study area, based on analysis completed as part of the Southwest Corridor Investment Framework (see Appendix D for instructions on how to access the framework) and based on outreach to low-income populations within the study area.

5.1.5 Method for Determination of Impacts to EJ Populations

The project-wide EJ finding is based on whether the proposed federal action (the Project) would result in a determination of disproportionate and high adverse impacts to EJ populations. Based on FTA guidance, the final project-wide EJ finding within this section considered the following criteria:

- Would the Project's adverse impacts be predominantly borne by EJ populations?
- Would adverse impacts to EJ populations be appreciably more severe or greater in magnitude than those suffered by non-EJ populations?
- Consideration of offsetting benefits against impacts of the Project to EJ populations.
- Consideration of mitigation measures that will be incorporated into the Project and consider enhancements or betterments that would be provided in lieu of mitigation.

5.2 Environmental Justice Populations

This section describes the minority and low-income populations identified within the study area, based on the methodology described in Section 5.1.

5.2.1 Minority Populations

Table 5.2-1 shows the total aggregate minority population for Hennepin County and cities through which the light rail alignment will pass (i.e., the affected cities) and Table 5.2-2 shows the total minority population for each of the affected cities, by race/ethnicity. The affected cities include Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis. The City of Edina, while not one of the cities in which the Project will operate, falls partially within the study area for the EJ analysis and was therefore included in the analysis. As shown in Table 5.2-1, the combined (aggregated) population of minorities in Hennepin County represents 28.3 percent of the total county population. The overall population in the affected communities is 603,891, and the total aggregated minority population in these communities is 190,505 or 31.5 percent of the total. The overall percentage of minorities in each of the affected communities is as follows:

- Eden Prairie – 20.0 percent
- Edina – 13.4 percent
- Minnetonka – 11.4 percent
- Hopkins – 33.4 percent
- St. Louis Park – 18.8 percent
- Minneapolis – 39.7 percent

As shown in Table 5.2-3, a total of 1,099 Census blocks are either in or partially within the study area, with a total population of 59,183. Of this total, 42,544 residents (i.e., 72 percent of the total population) were identified as “non-minority.” The remaining 16,639 study area residents (28 percent of the total) are minorities, of whom:

- 7,171 (12.1 percent of the total) are African Americans or black
- 315 (0.5 percent) are American Indians or Native Alaskans
- 4,298 (7.3 percent) are Asian Americans
- 3,133 (5.3 percent) are Hispanic or Latino
- 17 (<0.1 percent) are Native Hawaiians or Pacific Islanders
- 1,592 (2.7 percent) identified themselves as belonging to two or more races
- 113 (0.2 percent) identified themselves as some other race

Exhibits 5.2-1 illustrates the aggregate minority populations for census blocks included in the study area. Exhibits 5.2-2 through 5.2-8 show the individual minority populations within the study area.

TABLE 5.2-1

Aggregated Minority^a Population, by City and County^b

Jurisdiction	Total Population	Non-Minority		Minority	
		Population	Percent of Total	Population	Percent of Total
Eden Prairie	60,797	48,654	80.0%	12,143	20.0%
Edina	47,941	41,535	86.6%	6,406	13.4%
Minnetonka	49,734	44,081	88.6%	5,653	11.4%
Hopkins	17,591	11,721	66.6%	5,870	33.4%
St. Louis Park	45,250	36,745	81.2%	8,505	18.8%
Minneapolis	382,578	230,650	60.3%	151,928	39.7%
Total in Affected Cities	603,891	413,386	68.5%	190,505	31.5%
Hennepin County Total	1,152,425	826,670	71.7%	325,755	28.3%

^a Minority populations are any readily identifiable group or groups of minority persons who live in geographic proximity and, if circumstances warrant, geographically dispersed or transient persons, such as migrant workers or Native Americans, who will be similarly affected by the proposed project.

^b Sum of numbers may not equal due to rounding.

Source: 2010 Census, Summary File 100% Data, P9.

TABLE 5.2-2

Race/Ethnicity Characteristics, by City

Population Characteristics	Eden Prairie		Edina		Minnetonka		Hopkins		St. Louis Park		Minneapolis	
	Pop	% of Total	Pop	% of Total	Pop	% of Total	Pop	% of Total	Population	% of Total	Population	% of Total
Total Population ^a	60,697	100.0%	47,941	100.0%	49,734	100.0%	17,591	100.0%	45,250	100.0%	382,578	100.0%
Non-Minority Population	48,654	80.2%	41,535	86.6%	44,081	88.6%	11,721	66.6%	36,745	81.2%	230,650	60.3%
African American	3,360	5.5%	1,424	3.0%	1,837	3.7%	2,324	13.2%	3,319	7.3%	69,971	18.3%
American Indian/Alaska Native	94	0.2%	78	0.2%	103	0.2%	92	0.5%	175	0.4%	6,351	1.7%
Asian American	5,551	9.2%	2,914	6.1%	1,558	3.1%	1,483	8.4%	1,734	3.8%	21,399	5.6%
Hispanic/Latino	1,840	3.0%	1,101	2.3%	1,169	2.4%	1,390	7.9%	1,941	4.3%	40,073	10.5%
Native Hawaiian/Pacific Islander	21	0.0%	16	0.0%	8	0.0%	6	0.0%	36	0.1%	108	0.0%
Two or More Races	1,186	2.0%	785	1.6%	917	1.8%	530	3.0%	1,185	2.6%	13,004	3.4%
Some Other Race Alone	91	0.2%	88	0.2%	61	0.1%	45	0.3%	115	0.3%	962	0.3%
Total Minority Population	12,043	19.8%	6,406	13.4%	5,653	11.4%	5,870	33.4%	8,505	18.8%	151,928	39.7%

^a Sum of numbers may not equal due to rounding.

Source: 2010 Census, Summary File 100% Data, P9.

TABLE 5.2-3

Race/Ethnicity Characteristics for Study area Census Blocks, by City^a

Population Characteristics	Eden Prairie		Edina		Minnetonka		Hopkins		St. Louis Park		Minneapolis		Total Pop within Study Area Census Blocks	Percent of Total
	Pop	Percent of Total	Pop	Percent of Total	Pop	Percent of Total	Pop	Percent of Total	Pop	Percent of Total	Pop	Percent of Total		
Total within Study Area Census Blocks ^b	6,290	100.0%	1,192	100.0%	3,915	100.0%	13,973	100.00%	12,904	100.00%	20,909	100.00%	59,183	100.00%
Non-Minority	4,048	64.4%	1,071	89.9%	3,170	81.0%	8,777	62.8%	10,234	79.3%	15,244	72.9%	42,544	71.9%
African American	622	9.9%	30	2.5%	369	9.4%	2,048	14.7%	1,207	9.4%	28,95	13.9%	7,171	12.1%
American Indian/Alaska Native	16	0.3%	4	0.3%	7	0.9%	79	0.6%	52	0.4%	157	0.8%	315	0.5%
Asian American	1,128	17.9%	41	3.4%	128	3.3%	1,346	9.6%	462	3.6%	1,193	5.7%	4,298	7.3%
Hispanic/Latino	319	5.1%	30	2.5%	148	3.8%	1,242	8.9%	554	4.3%	840	4.0%	3,133	5.3%
Native Hawaiian/Pacific Islander	3	0.1%	0	0.0%	2	0.1%	4	0.0%	2	<0.1%	6	<0.1%	17	<0.1%
Two or More Races	144	2.3%	16	1.3%	87	2.2%	442	3.2%	366	2.8%	537	2.6%	1,592	2.7%
Some Other Race Alone	10	0.2%	0	0.0%	4	0.1%	35	0.3%	27	0.2%	37	0.2%	113	0.2%
Total Minority Population within Study Area	2,242	35.6%	121	10.2%	745	19.0%	5,196	37.2%	2,670	20.7%	5,665	27.1%	16,639	28.1%

^a Includes population characteristics of Census Block Groups within the study area.^b Sum of numbers may not equal due to rounding.

Source: 2010 Census, Summary File 100% Data, P9.

EXHIBIT 5.2-1

Aggregate Race/Ethnicity, by Census Block

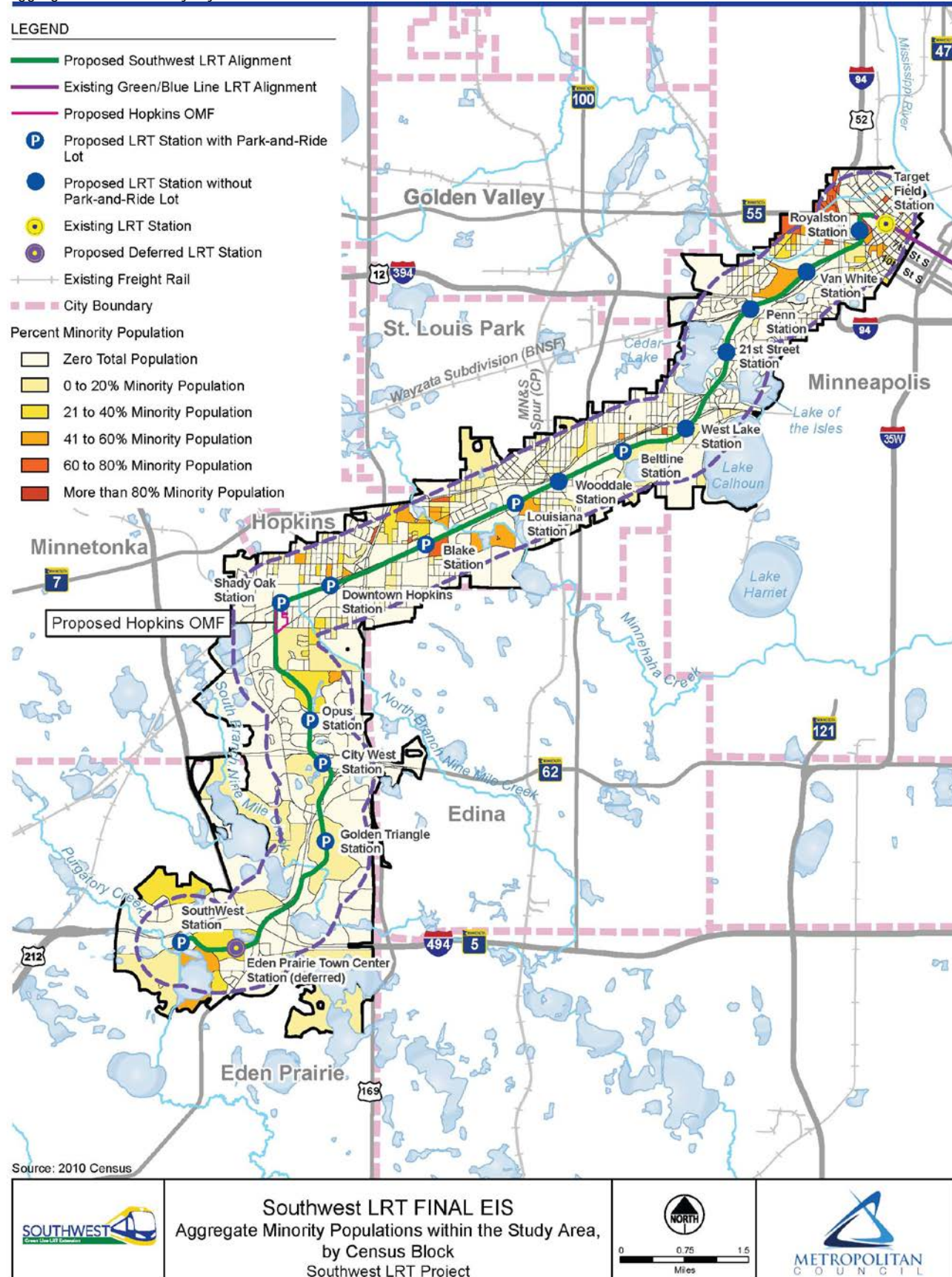


EXHIBIT 5.2-3

American Indian Populations within the Study area, by Census Block

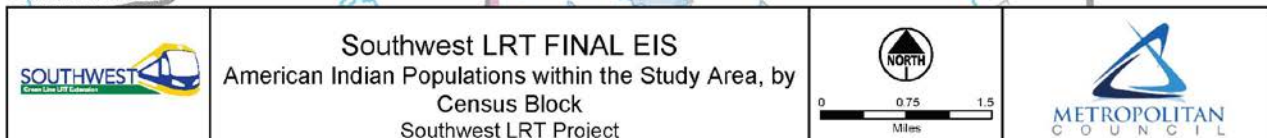
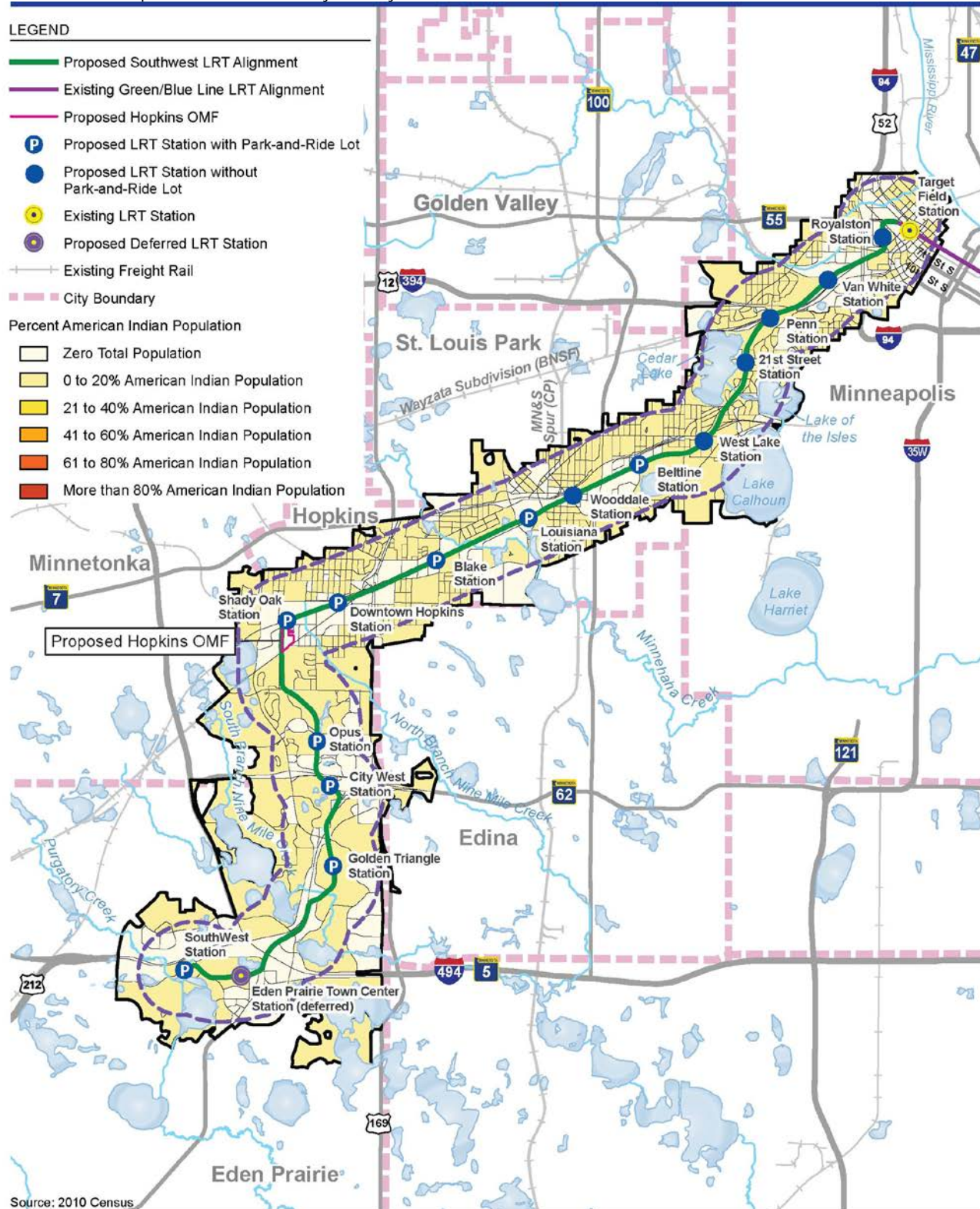


EXHIBIT 5.2-4

Asian American Populations within the Study area, by Census Block

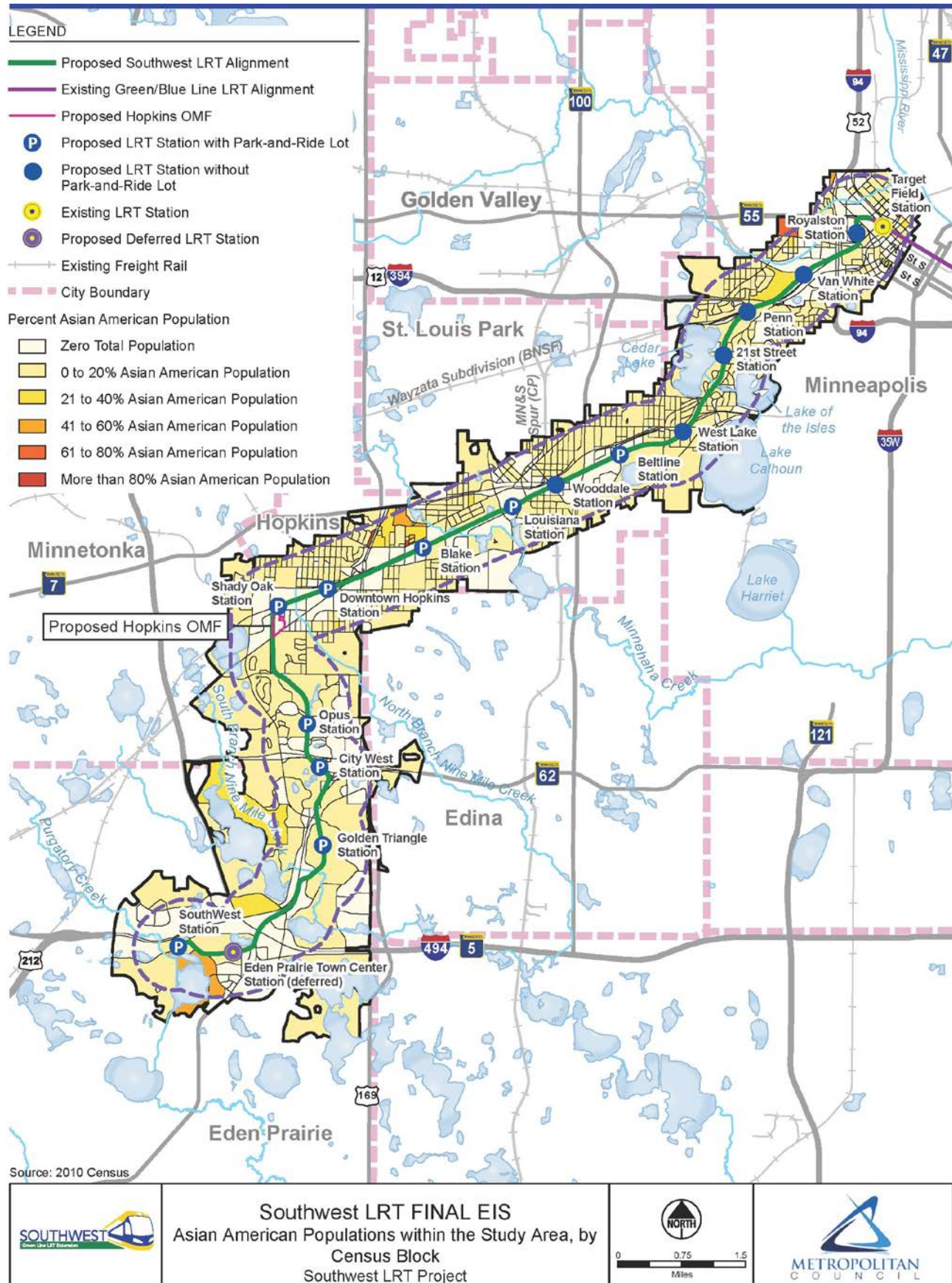


EXHIBIT 5.2-5

Hispanic/Latino Populations within the Study area, by Census Block

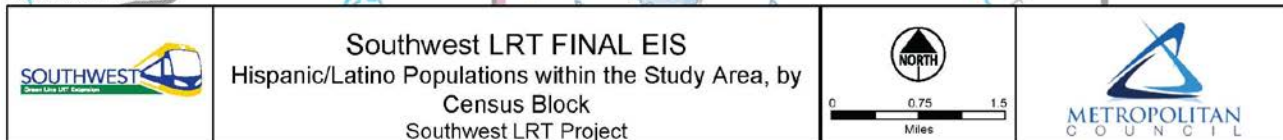
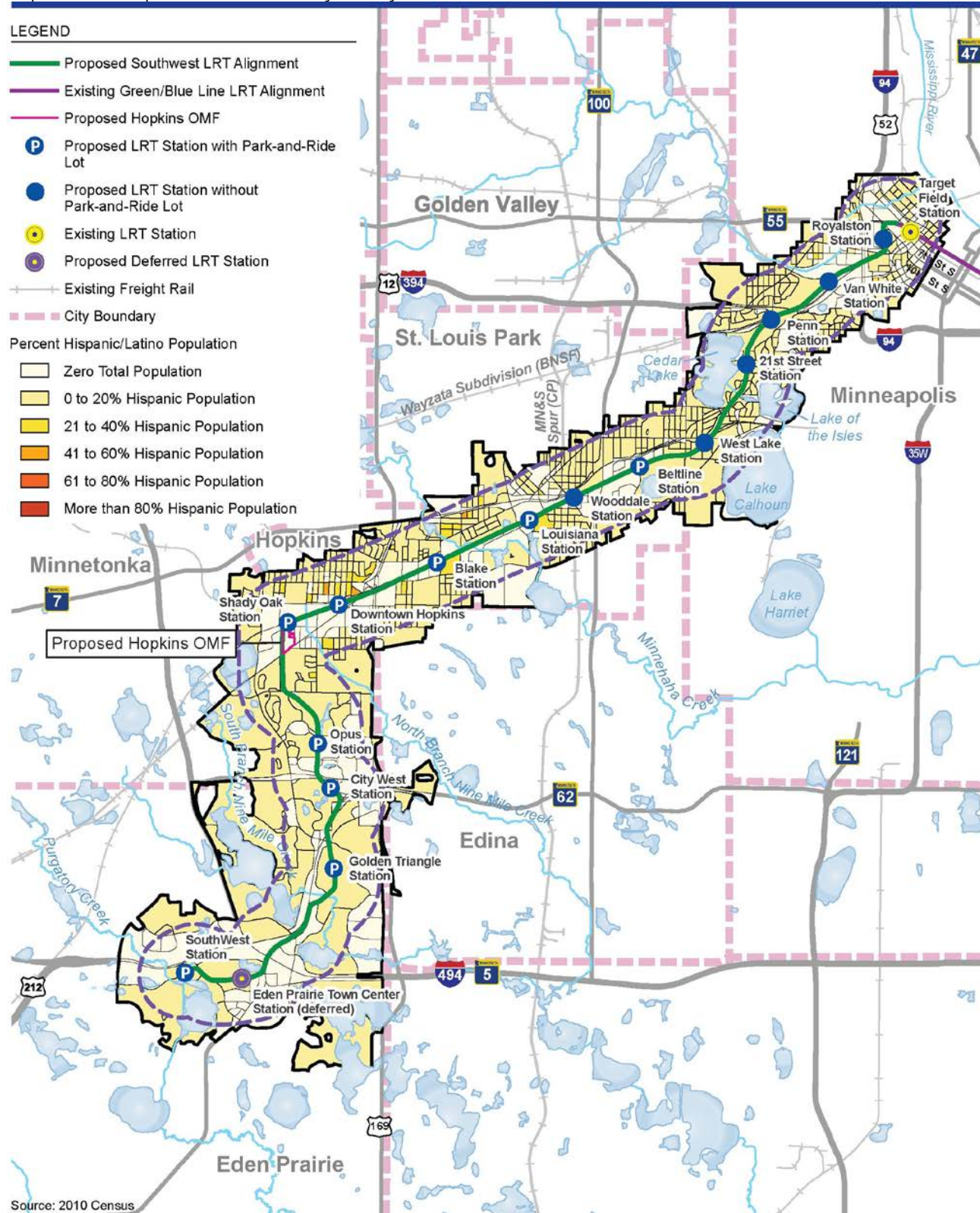
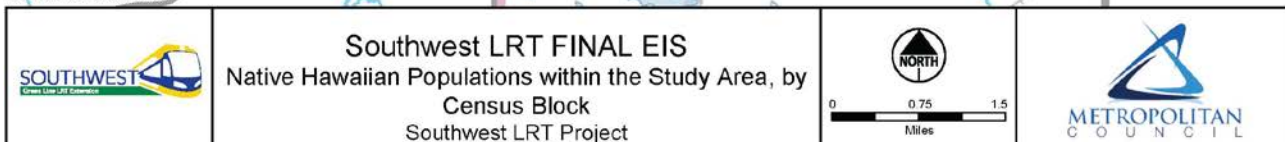
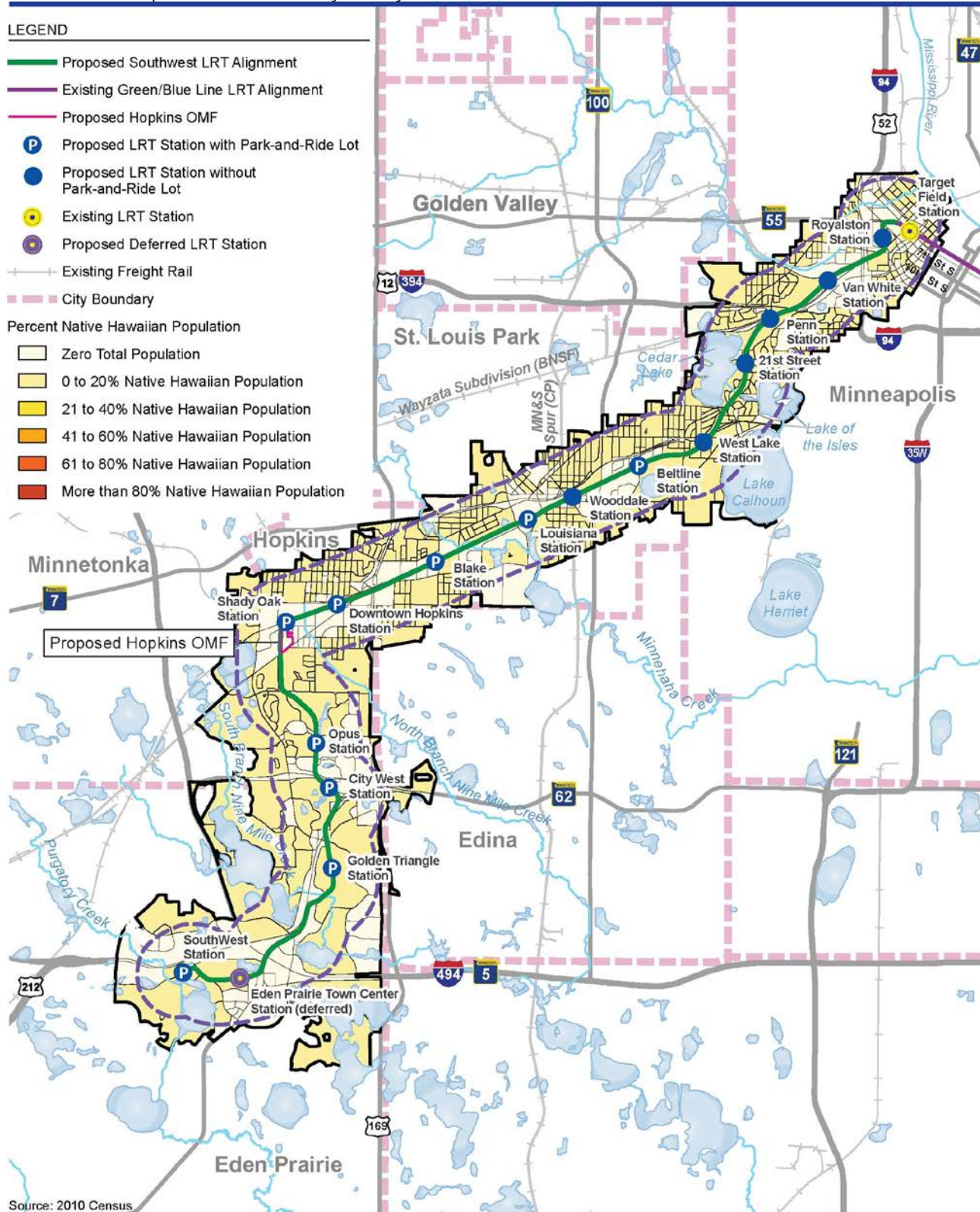


EXHIBIT 5.2-6

Native Hawaiian Populations within the Study area, by Census Block



Two of More Race/Ethnicity Group Populations within the Study area, by Census Block

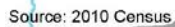
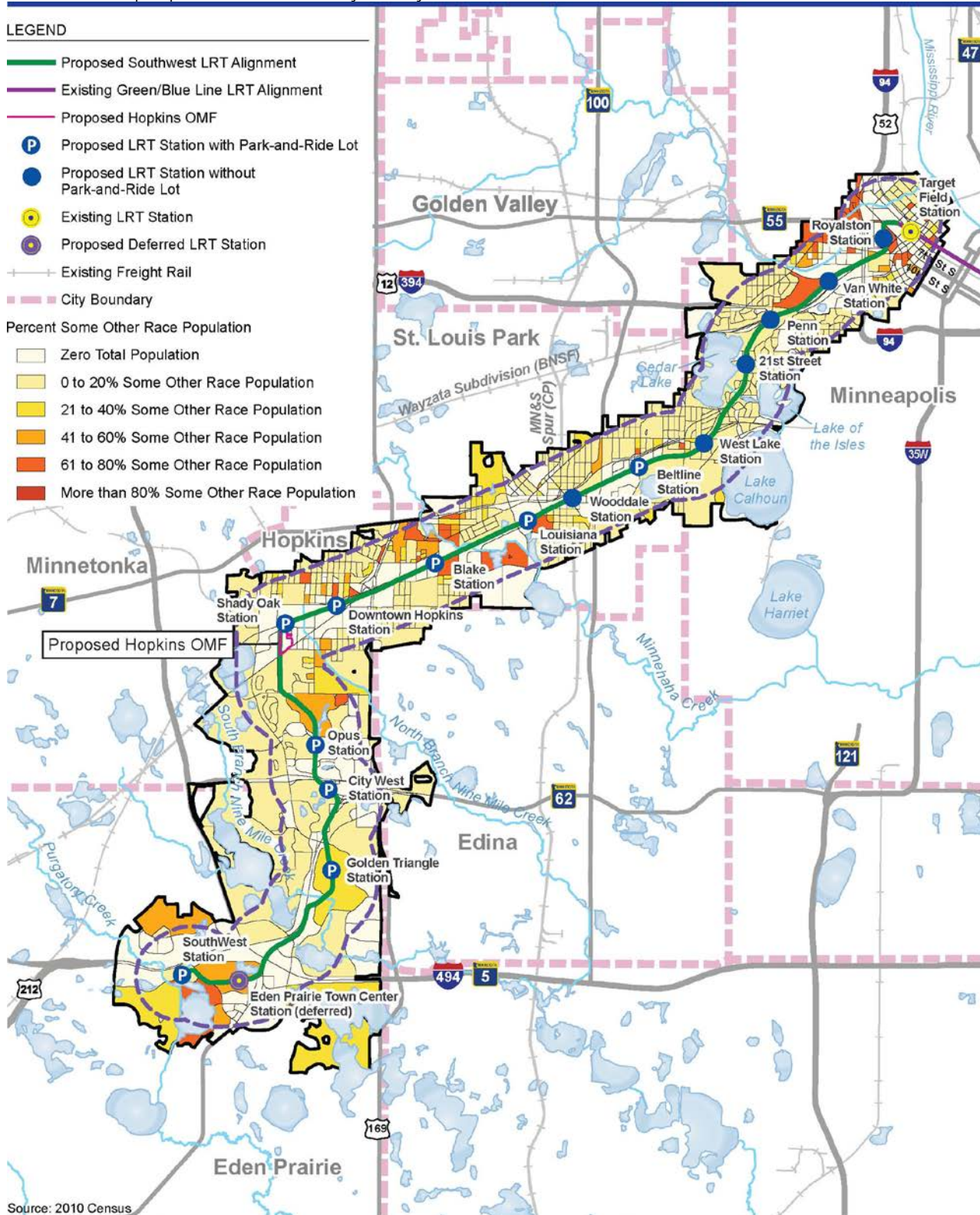
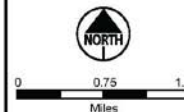


EXHIBIT 5.2-8

Other Race Group Populations within the Study area, by Census Block



Southwest LRT FINAL EIS
Other Race Group Populations within the Study Area,
by Census Block
Southwest LRT Project



5.2.2 Low-Income Populations

Table 5.2-4 and Exhibit 5.2-9 provide a summary of low-income residents within Hennepin County in each of the affected cities (i.e., Eden Prairie, Edina, Minnetonka, Hopkins, St. Louis Park, and Minneapolis). In Hennepin County, a total of 146,826 or 12.8 percent of residents were below the poverty level in the last 12 months analyzed. Among the affected communities, Minneapolis has the highest percentage of low-income residents at 22.5 percent and Edina has the lowest at 4.0 percent.

TABLE 5.2-4

Low-Income Residents by State, County, City, and Study Area

Place	Total Population for Whom Poverty is Determined	Population with Incomes in the Past 12 Months above Poverty Level	Population with Incomes in the Past 12 Months below Poverty Level	Percent of Population below Poverty Level
Minnesota	5,223,936	4,625,545	598,391	11.5%
Hennepin County	1,148,765	1,001,939	146,826	12.8%
Eden Prairie	61,364	58,186	3,178	5.2%
Edina	48,344	46,426	1,918	4.0%
Minnetonka	50,143	47,657	2,486	5.0%
Hopkins	17,517	14,390	3,127	17.9%
St. Louis Park	45,327	41,884	3,443	7.6%
Minneapolis	373,744	289,668	84,076	22.5%
Totals Within Affected Communities	596,439	498,211	98,228	16.5%
Study Area	89,696	77,192	12,504	13.9%

Source: 2009-2013 American Community Survey 5-year Estimates.

The ACS data described above was supplemented with information identifying affordable rental housing units within close proximity to station areas, in order to further understand the location of low-income populations within the study area. The Hennepin County Department of Housing, Community Works & Transit, as part of the Southwest Corridor Investment Framework, identified affordable rental housing units within a radius of approximately 2 miles of proposed light rail stations related to the Project. As shown in Table 5.2-5, affordable housing was identified in seven of the 13 station areas. Refer to the Southwest Corridor Investment Framework (see Appendix D) for mapping showing the location of these developments.

5.3 Public Involvement

As described in Chapter 9, a Communication and Public Involvement Plan (Council, 2015) was prepared for the Project, recognizing the need to communicate and engage with multiple audiences within the study area and the region as a whole and specifically focusing on EJ communities comprising low-income and minority populations. Throughout the Project's planning, design, and analysis, the Council and Project partners sought to develop broad public understanding and support of the Project as a necessary investment to improve access and mobility to employment, educational and economic opportunities within the study area and beyond. In addition, the Council and Project partners sought to engage the public, including residents, businesses, travelers, and agencies in the project planning process to address their needs and concerns.

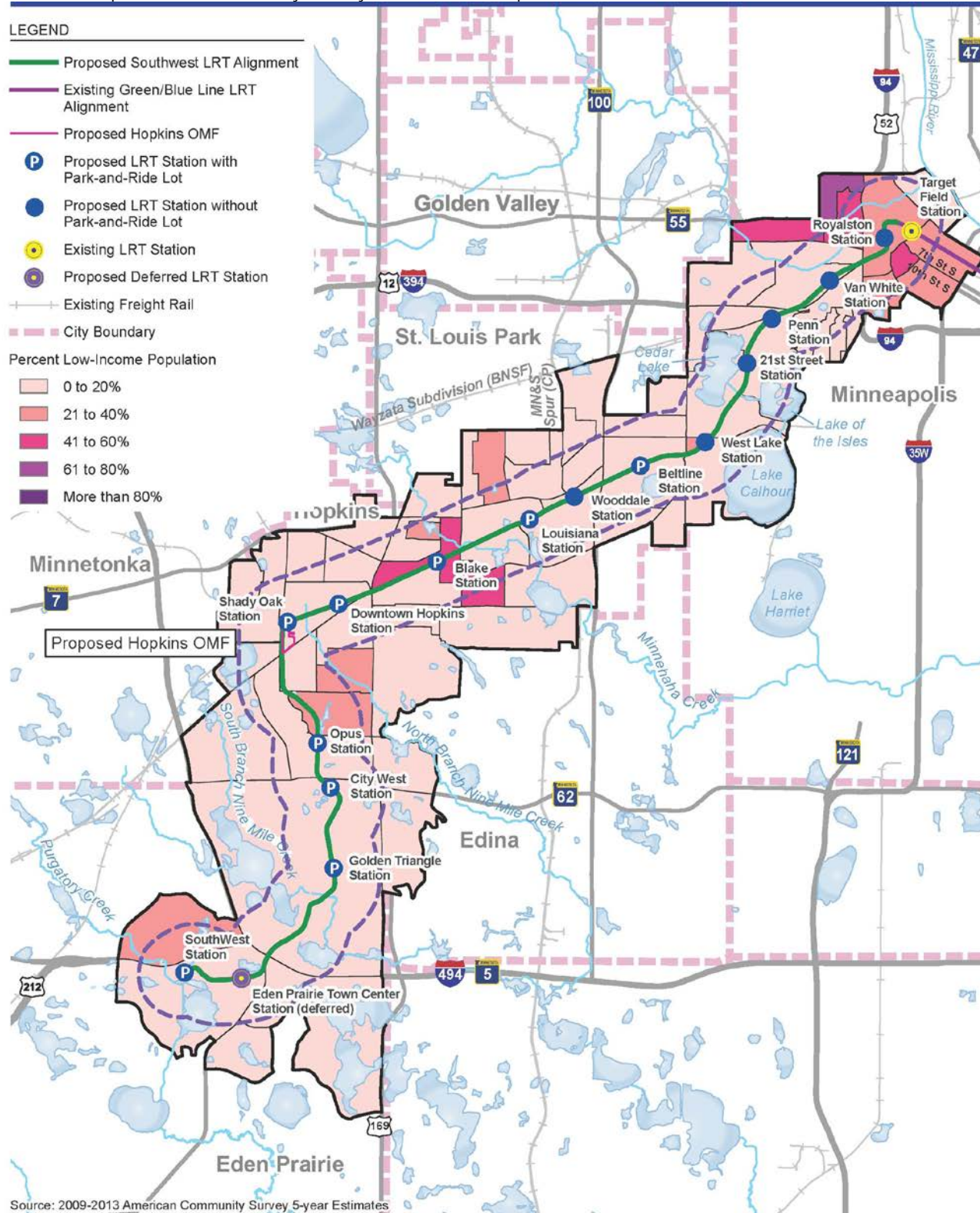
The Communication and Public Involvement Plan identified key business and community groups including new immigrant communities, communities of color, low-income communities, and people with disabilities within the corridor and strategies to maximize opportunities for public involvement and communication during the engineering and construction process.

5.3.1 Project Engagement Efforts

The Council developed a public outreach strategy for the Project that created meaningful opportunities for public engagement for all members of the community, including members of EJ communities. Throughout

EXHIBIT 5.2-9

Low-Income Populations within the Study area, by Census Block Group




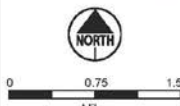

	<p>Southwest LRT FINAL EIS</p> <p>Low-Income Populations within the Study Area, by Census Block Group</p> <p>Southwest LRT Project</p>		
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TABLE 5.2-5
Location of Affordable Housing

Station	Affordable Rental Housing (Total Number of Affordable Units)
SouthWest	1 multifamily low-income development – 70 units
Eden Prairie Town Center	2 multifamily low-income developments – 435 units
Golden Triangle	1 multifamily low-income development – 163 units
City West	1 multifamily low-income development – 280 units
Opus	2 multifamily low-income developments – 367 units
Shady Oaks	5 multifamily low-income developments – 580 units
Downtown Hopkins	4 multifamily low-income development – 167 units
Blake Road	No low-income housing identified
Louisiana	No low-income housing identified
Wooddale	No low-income housing identified
Beltline	No low-income housing identified
West Lake	No low-income housing identified
21st Street	No low-income housing identified
Penn	No low-income housing identified
Van White	No low-income housing identified
Royalston	No low-income housing identified

Source: Hennepin County, Southwest Corridor Investment Framework (2015).

Project Development and the NEPA process, the Project team used several avenues of communication and outreach to engage minority and low-income communities affected by the Project. First, Project staff reached out to established neighborhood groups, community leaders, and private organizations composed of and connected to minority and low-income communities in the study area, such as:

- Corridors of Opportunity grantee organizations.** The Council worked with and through an enterprise called Corridors of Opportunity, which ran from 2011 through the end of 2013. The Southwest LRT Corridor was one of seven Corridors of Opportunity projects. The purpose of the Council Corridors of Opportunity initiative was to engage underrepresented communities (low-income, communities of color, immigrant communities, persons with disabilities) in project planning throughout the region. As part of this effort, the Metropolitan Council awarded grants to six community-based non-profit organizations that engage and involve underrepresented communities in the study area. Collectively, the service area of these grantees covers a majority (i.e., greater than 90 percent) of the EJ study area. Each of these organizations has worked in unique ways to engage their communities in participation, decision-making, and leadership roles related to the Project planning and implementation.
- Community Advisory Committee.** The Community Advisory Committee (CAC) is an established long-standing forum for community input and dissemination of Project information. The Southwest LRT CAC has been meeting on a regular basis since 2012 and includes resident representatives from each city and key business and institutional representatives. Area residents and interested advocacy group representatives often attend CAC meetings to obtain information and provide input. Recently, representatives from each Corridors of Opportunity grantee organization have joined the CAC in an effort to maintain the connection and stream of information between the grantee organizations and the Project long after the grant period has ended. Meetings are open to the public and meeting dates, locations, and materials are available on the Project website. Members of the public who do not sit on the CAC often attend the meetings to receive Project information and talk with staff. The public is also welcome to sign up for an email distribution list to receive CAC announcements and meeting materials. Refer to the Southwest LRT Community Events Summary Report for a listing of CAC meetings, including the date, topic covered, and attendees (see Appendix C for instructions on how to access this document).

- **Community and Neighborhood Events.** Project staff actively participated in events sponsored by several community and neighborhood organizations. See the Southwest LRT Community Events Summary Report for details (see Appendix C for instructions on how to access this document).

In addition, Project staff routinely communicate Project information, decisions, and upcoming opportunities for participation in a number of ways. Chapter 9 provides a description of the public involvement events and activities undertaken during the Project. Additionally, refer to the Southwest LRT Community Events Summary Report for a complete listing of public engagement opportunities (see Appendix C for instructions on how to access this document).

While these events and activities engaged all members of the community, they were designed to incorporate EJ principles and included strategies and techniques for effective public engagement of minority and low-income populations by eliminating barriers to active participation. Specifically, the Project team:

- Engaged community leaders in communities of minority residents, new immigrant communities, and low-income communities to encourage participation from these communities, and to advise the Council on ways to effectively communicate with these communities through meetings with La Asamblea de Derechos Civiles, Centro de Trabajadores Unidos en la Lucha, and Harrison Neighborhood Association
- Recruited member of EJ communities to participate in advisory groups, including Community Advisory Committee members from New American Academy, Metropolitan Interfaith Council on Affordable Housing, ISALAH, and Blake Road Corridor Collaborative
- Participated in Corridors of Opportunity grantee organization-led events, such as meetings and tours and often attend neighborhood association meetings to provide information and updates, such as the Harrison Neighborhood Association Transit Equity Committee, Waite House Community Latino Workers Forum, Heritage Park Neighborhood Association, Redeemer Church Block Park, Meadowbrook Collaborative National Night Out, and Bassett Creek Valley Redevelopment Oversight Committee
- Held events in a location that serves interests of EJ communities, including the Harrison Park Gym, Dunwoody College of Technology and the Minneapolis Central Library
- Scheduled events at times that would allow maximum participation by EJ communities by holding open houses and CAC meetings in the evening and attending local community weekend events such as Mainstreet Days (Hopkins), Raspberry Festival (Hopkins), North Moves (Minneapolis), and Parktacular (St. Louis Park); designed the format of events to allow for maximum input by having staff engage one to one with attendees, including staff writing comments, questions, and concerns as they were engaging
- Designated Project staff to accommodate the needs of person who are linguistically and culturally isolated, as well as persons who have disabilities, by posting accessible documents online and by making translation and interpretation services available as requested
- Designed events that go beyond auditory nature of public meetings by including visual techniques such as photographic examples of design features, engineering renderings, videos, and animations
- Presented technical information and complex policies and procedures in plain language, including guides to municipal consent and the Supplemental Draft EIS (translated into Spanish, Hmong, and Somali), as well as having outreach staff available to meet with individuals to discuss technical information
- Made all documents that require an official comment period available at locations that were easily accessible by members of EJ communities, including city halls, libraries, and online, and staff were available to meet with individuals when requested
- Disseminated Project information broadly, including announcements via ethnic media that deliver information in native languages, such as ethnic newspapers and radio stations serving EJ communities
- Developed multilingual fact sheets and brochures for distribution and publication on the Project website

The diversity of outreach strategies and techniques, materials, and information has resulted in involvement of EJ communities, contributing to the Metropolitan Council and FTA's understanding of the communities in

the corridor and how the Project will affect them. Hennepin County Regional Railroad Authority (HCRA) and the Council used suggestions and information gathered during public outreach activities to identify issues and concerns to be studied in the Draft EIS, Supplemental EIS, and Final EIS.

5.3.2 Environmental Justice-Related Outreach Efforts

Throughout the NEPA process, members of EJ communities have met with staff to resolve individual property or business concerns. Table 5.3-1 summarizes some of the major concerns in the EJ communities, by station area, and the actions the Southwest LRT has taken to address them. While the following table summarizes major issues and concerns specific to EJ communities, the Project has also addressed a number of general concerns that affect EJ and non-EJ populations alike. Refer to the relevant sections within Chapters 3 and 4 for an assessment of impacts and committed mitigation measures related to each of the environmental and transportation categories evaluated.

TABLE 5.3-1

Major Environmental Justice Issues and Project Actions and Responses, by Station Area

City or Station Area ^a	Major Issues/Concerns	Project Actions and Responses
Eden Prairie Minnetonka Hopkins St. Louis Park	<ul style="list-style-type: none"> Potential reduction in the availability of affordable housing related to station area development 	<ul style="list-style-type: none"> Ongoing coordination with Project partners to preserve a mix of housing affordability and to protect housing options for existing low-income residents
Eden Prairie Town Center	<ul style="list-style-type: none"> Accessibility to station and region for residents in the area 	<ul style="list-style-type: none"> Maintained Eden Prairie Town Center Station as a deferred station
Downtown Hopkins	<ul style="list-style-type: none"> Access from affordable housing across Excelsior Boulevard 	<ul style="list-style-type: none"> Design includes enhanced pedestrian facilities, such as new crosswalks and pedestrian ramps
Beltline	<ul style="list-style-type: none"> Concern about bus access to the station 	<ul style="list-style-type: none"> Incorporated specific bus drop off location at the station
21st Street	<ul style="list-style-type: none"> In earlier planning station was eliminated; the Native American community along Franklin Avenue was concerned about losing the most direct connection to the Project. 	<ul style="list-style-type: none"> Station added back into Project
Penn	<ul style="list-style-type: none"> Concern that Penn Station would be eliminated as part of ongoing Project scope refinements 	<ul style="list-style-type: none"> Station continually retained in Project
Van White	<ul style="list-style-type: none"> Concern over the ability of the Project to maximize economic development opportunities, particularly in the Basset Valley Creek/Linden Yards area Concern that sidewalks between Glenwood and the new Van White bridge were impassible for senior citizens or those with limited mobility Concern that Van White Station would be eliminated as part of ongoing Project scope refinements 	<ul style="list-style-type: none"> Coordinating with local jurisdictions to ensure station area consistency with land use plans, including the Basset Valley Creek Master Plan Added sidewalk improvements from new bridge to just north of Glenwood Station continually retained in Project
Royalston	<ul style="list-style-type: none"> Desire for direct access to Farmers Market to increase transit connections to healthy food options. Concern about proximity of LRT bridge structure to Sharing and Caring Hands 	<ul style="list-style-type: none"> Adjusted design to include enhanced pedestrian and bicycle facilities, providing connectivity between the Farmers Market and station Adjusted curvature of bridge to shift farther away from Sharing and Caring Hands building

^a This table includes only station areas where specific concerns were raised as part of the public involvement process.

Source: Council, 2015.

5.4 Environmental Justice Analysis

The FTA Circular (August 2012) states that policies, programs, and activities that have the potential to have a disproportionately high and adverse effect on human health or the environment shall include explicit consideration of the effects on minority populations and low-income populations. Tables 3.0-1 and 4.0-1 summarize the impacts by environmental category that will be associated with the Project (see Chapters 3 and 4 for additional detail on impacts within each environmental category). The FTA Circular defines disproportionately high and adverse effect on human health or the environment, to include an adverse effect that:

- Is predominantly borne by a minority population and/or a low-income population, or
- Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

The FTA Circular (Section 2.C.2, *Determining Whether Adverse Effects are Disproportionately High*) states that, in making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures that will be implemented and all offsetting benefits to the affected minority and low-income populations may be taken into account. This is particularly important for public transit projects because they often involve both adverse effects (such as short-term construction impacts and increases in bus traffic) and positive benefits (such as improved transportation options and connectivity, or overall improvement in air quality).

All environmental categories were reviewed to identify those environmental categories that will not result in any adverse effects, based on the analysis described in Chapters 3 and 4 of this Final EIS. The environmental categories with no adverse effects identified were not considered for additional EJ analysis due to no potential for disproportionately high and adverse effects to EJ populations. Environmental categories that will result in adverse effects were retained to determine if and to what extent these adverse effects would affect EJ populations (i.e., have the potential to be disproportionately high and predominately borne by EJ populations). Table 5.4-1 includes all environmental categories and shows those that were eliminated from further EJ analysis or retained, respectively.

The following sections provide a description of additional EJ analysis for the seven environmental categories identified as having potential for disproportionately high and adverse effects predominately borne by EJ populations, including a summary of the EJ finding for each of the environmental categories evaluated. These EJ findings assess whether the anticipated impacts of the environmental categories evaluated will likely result in disproportionately high and adverse impacts on minority and low-income populations. This assessment includes consideration of offsetting benefits the Project would have on minority and low-income populations, as well as consideration of mitigation measures identified throughout Chapters 4 and 5 of this Final EIS. The Project's final project-wide EJ finding is included in Section 5.5.

5.4.1.1 Acquisitions and Displacements

Section 3.4.3.1 of this Final EIS describes the long-term direct and indirect, and short-term impacts of the Project related to acquisitions and displacements. As summarized in Table 3.0-1, long-term direct impacts related to the Project include partial acquisition of 159 parcels (totaling approximately 133.5 acres) and full acquisition of 36 parcels (totaling approximately 64 acres). Of these, 145 parcels (totaling approximately 126 acres) are private property and 50 parcels (totaling approximately 71.5 acres) are currently under public ownership. The full or partial acquisition of property with industrial and commercial uses will result in the relocation of up to 72 businesses that currently operate on or use 20 of the parcels to be acquired by the Project and is not expected to displace any EJ populations. Further, as described in Section 3.4.3.2 and summarized in Table 3.0-1, there is potential for the long-term indirect impact of increased development and redevelopment in areas surrounding proposed light rail stations because of improved transit access. The Project will also result in short-term property acquisitions in the form of temporary (i.e., construction) easements. Construction easements will be needed on approximately 134 acres affecting approximately 178 parcels. To the extent that land surrounding the proposed stations is occupied by low-income people and

TABLE 5.4-1

Environmental Categories for the EJ Impact Analysis

Environmental Category ^a	Eliminated from Further EJ Analysis	EJ Impact Analysis
Land Use (Section 3.1)	X	
Economic Activity (Section 3.2)	X	
Neighborhoods and Communities (Section 3.3)	X	
Acquisitions and Displacements (Section 3.4)		X
Cultural Resources (Section 3.5)		X
Parks, Recreation Areas, and Open Spaces (Section 3.6)		X
Visual Quality and Aesthetics (Section 3.7)		X
Geology and Groundwater (Section 3.8)	X	
Surface Water Resources (Section 3.9)	X	
Ecosystems (Section 3.10)	X	
Air Quality and Green House Gases (Section 3.11)	X	
Noise (Section 3.12)		X
Vibration (Section 3.13)		X
Hazardous and Contaminated Materials (Section 3.14)	X	
Electromagnetic Interference and Utilities (Section 3.15)	X	
Energy (Section 3.16)	X	
Transit (Section 4.1)	X	
Roadway and Traffic (Section 4.2)	X	
Parking (Section 4.3)		X
Freight (Section 4.4)	X	
Pedestrian and Bicycle (Section 4.5)	X	
Safety and Security (Section 4.6)	X	

^a Refer to the applicable sections in Chapters 3 and 4 of this Final EIS for a detailed description of the impacts and mitigation measures associated with each environmental and transportation category.

Source: Council, 2015.

minorities, the Project presents the potential for development and/or redevelopment that may result in the displacement of EJ populations as the result of a loss of affordable housing options.

All Project acquisitions, full and partial, will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Relocation Act) (42 United States Code § 4601) and associated regulations contained in 40 Code of Federal Regulations Part 24, which ensures fair treatment during the acquisition process.

Finding: The Project will not directly displace any residences occupied by EJ populations, and none of the businesses that will be displaced predominantly serve EJ populations. Based on a review of the distribution of Project-related acquisition and displacement impacts throughout the study area, and after the consideration of mitigation to be implemented by the Project, the impacts are not disproportionately borne by EJ populations or appreciably more severe than those suffered by the non-EJ populations. Acquisitions-related impacts will be experienced by all populations in the corridor, regardless of race, ethnicity, or socioeconomic status, and, therefore, the Project will not have a disproportionately high and adverse impact on EJ populations related to acquisitions and displacements.

5.4.1.2 Cultural Resources

Based on results of the effects assessments, FTA has determined, in consultation with the Minnesota State Historic Preservation Office and other consulting parties, that the Project will have No Adverse Effect on 26 historic properties and an Adverse Effect on five properties, including two archaeological sites, one

historic district, one contributing property to that historic district, and one property individually listed in the National Register of Historic Places. Due to the Project's adverse effect on these five properties—Sites 21HE0436 and 21HE0437; the Grand Rounds Historic District; the Kenilworth Lagoon as a contributing property to the Grand Rounds Historic District; and the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot—it has been determined that the undertaking will have an Adverse Effect on historic properties.¹ See Section 3.5.4 for additional information regarding the Project's impacts on cultural resources.

Finding: The historic properties that will be adversely effected, as described above, are located in Minneapolis and St. Louis Park (see Exhibits 3.5-1 through 3.5-5) and do not primarily serve EJ populations (see Exhibits 5.2-1 and 5.2-9). Cultural resource impacts will be experienced by all populations in the corridor, regardless of race, ethnicity, or socioeconomic status, and are not disproportionately borne by EJ populations. Therefore, there will be no disproportionately high and adverse impacts on EJ populations related to cultural resources.

5.4.1.3 Parks, Recreation Areas, and Open Spaces

As described in Section 3.6.3 and summarized in Table 3.0-1, the following parks, recreation areas, and open space properties will be affected as a result of the Project, prior to mitigation. Refer to Table 3.6-2 for descriptions of these facilities and more detail regarding impacts.

- Purgatory Creek Park in Eden Prairie
- Nine Mile Creek Conservation Area in Minnetonka
- Unnamed Open Space A in Minnetonka
- Unnamed Open Space B in Minnetonka
- Overpass Skate Park in Hopkins
- Minnehaha Creek Open Space in St. Louis Park
- Edgebrook Park in St. Louis Park
- Jorvig Park in St. Louis Park
- Lilac Park in St. Louis Park
- Park Siding Park in Minneapolis
- Kenilworth Channel/Lagoon in Minneapolis
- Cedar Lake Park in Minneapolis
- Bryn Mawr Meadows Park in Minneapolis

Concerns were expressed about ensuring trail connections from Bryn Mawr Meadows to stations and regional trails, and impacts to trees and wildlife at Unnamed Open Space A & B in Minnetonka. As a part of community advisory group meetings held during the Project development process, no specific concerns were raised related to impacts at Purgatory Creek Park in Eden Prairie, Nine Mile Creek Conservation Area in Minnetonka, Jorvig Park in St. Louis Park, Lilac Park in St. Louis Park, Park Siding Park in Minneapolis, Cedar Lake Park in Minneapolis, or Kenilworth Channel/Lagoon in Minneapolis.

Finding: None of the parks affected by the Project predominantly serves an EJ population or is located in an EJ area. The park, recreation area, and open space impacts will be experienced by all populations in the corridor, regardless of race, ethnicity, or socioeconomic status, and are not disproportionately borne by EJ populations or appreciably more severe than those suffered by non-EJ populations. Transit access to many parks, recreation areas and open spaces will be improved with the Project. Therefore, there will be no disproportionately high and adverse impacts on EJ populations related to parks, recreation areas, and open spaces.

¹ Through the Section 106 process to resolve the adverse effect to the Chicago, Milwaukee, St. Paul & Pacific Railroad Depot, including coordination with the Project's Section 106 consulting parties, measures were incorporated into the Project's design and Section 106 Memorandum of Agreement that avoid the adverse effect to the property. See Section 3.5 of this Final EIS for additional information about the Project's Section 106 process and analysis and Appendix H for the Section 106 Memorandum of Agreement.

5.4.1.4 Visual Quality and Aesthetics Impacts

Section 3.7.3 of this Final EIS describes the impacts that the Project will have on visual quality and aesthetics (see also Appendix K). The analysis of visual quality and aesthetics included assessments of long-term direct and indirect impacts at 19 viewpoints. Results of the analysis found that of the 19 viewpoint impacts assessed, seven will be “low,” six will be “moderate,” and six will be “substantial.” Of the 19 viewpoints assessed, seven are located in areas with a concentration of EJ populations based on race and ethnicity and/or income. The seven viewpoints are numbers 1, 2, 3, 6, 11, 12, and 19 (refer to Section 3.7 for a description of the location of these viewpoints). This includes two of the six viewpoints with substantial visual quality impacts (viewpoints 6 and 12), two of the six viewpoints with moderate visual quality impacts (viewpoints 2 and 3), and three of the seven viewpoints with low visual quality impacts (viewpoints 1, 11, and 19).

Where “potentially substantial” and “substantial” visual impacts have been identified, the Council will incorporate the following visual mitigation measures into the Project:

- Retain as much of existing vegetation as appropriate to provide shielding for sensitive viewpoints, including techniques such as chaining and mowing without removal of the root systems, and/or tying back large shrubs and trees to provide adequate areas for construction activities.
- Where appropriate, restore and replant cleared areas in a timely manner, considering such factors as species type, seasonal growing conditions, and other construction-related activities. Restoration activities will also take into account the following:
 - Interference with overhead structures (OCS)
 - Site distance requirements
 - Additional safety measures
- Where appropriate, place new and replacement trees based on such factors as helping to provide the maximum screening of views to and from sensitive viewpoints (e.g., adjacent residential areas), or providing street ornamentation.
- Where adequate right-of-way exists and in areas where the light rail alignment will be located adjacent to sidewalks or trails, provide planter strips between the sidewalk or trail and utilize native plant selections (e.g. wild flowers, grasses, or other native plants) to create a visual buffer and to screen views of the light rail alignment.
- As appropriate, develop landscape plans for the adjacent to elevated structures, retaining walls, noise walls, and TPSS sites as appropriate to achieve such effects as providing partial screening of the piers from sensitive viewpoints.
- Incorporate visual mitigation measures for Section 106 protected resources and Section 4(f) protected properties as specified in the Section 106 Memorandum of Agreement and the Final Section 4(f) Evaluation, respectively (see Appendix H and J, respectively).

In addition, each of the viewpoints evaluated will experience short-term impacts that will occur as a result of construction of the Project (refer to Section 3.7.3). Such impacts will be associated with construction staging areas; concrete and form installation; removal of some of the existing vegetation along the trail; lights and glare from construction areas; and dust and debris.

Finding: Based on a review of the distribution of Project-related visual quality impacts throughout the study area and after the consideration of visual quality mitigation to be implemented by the Project, the visual quality impacts are not disproportionately borne by EJ populations or appreciably more severe than those suffered by the non-EJ populations. Therefore, the Project will not have a disproportionately high and adverse impact on EJ populations related to visual quality.

5.4.1.5 Noise

Section 3.12.3 of this Final EIS describes the impacts of the Project on noise (see also Appendix L). The analysis of long-term direct and indirect noise impacts found that without mitigation there would be

237 dwelling units where moderate noise impacts would occur and 558 dwelling units where the noise impacts would be severe. A majority of the noise impacts without mitigation would be related to light rail vehicle horn soundings at -grade crossings in the corridor. However, the Project will implement measures to avoid, minimize, and mitigate noise impacts (see Section 3.12), as appropriate. Many of the noise impacts will be mitigated and will not have an adverse effect on EJ populations. After mitigation, there will be moderate residual noise impacts at four locations. Of these, one location, Park Glen Townhomes, is in an area with a potential EJ population, while the remaining locations are not located in areas with an EJ population.

The Project will result in short-term impacts related to construction. For residential land use, short-term at-grade track construction noise impacts will extend to approximately 120 feet from the construction site. If nighttime construction is conducted, short-term noise impacts from at-grade construction will extend to approximately 380 feet from the construction site. Construction noise mitigation measures will be implemented as appropriate to address construction noise impacts from the Project.

Finding: Based on a review of the distribution of Project-related moderate and severe noise impacts throughout the study area (see Exhibits 3.12-3 through 3.12-5) and after the consideration of noise mitigation to be implemented by the Project, the residual noise impacts are not disproportionately borne by EJ population or appreciably more severe than those suffered by the non-EJ population. Therefore, the Project will not have a disproportionately high and adverse impact on EJ populations related to noise.

5.4.1.6 Vibration

As described in Section 3.13.3, long-term and short-term impacts considered in the vibration analysis included vibration impacts and ground-borne noise impacts. The Project will not result in vibration impacts for any residential or institutional land uses. The Project would, however, result in 58 ground-borne noise impacts for residential land uses without mitigation. These impacts would be directly adjacent to and south of the proposed light rail tunnel in the Kenilworth Corridor. The Council will use highly resilient rail fasteners in the proposed light rail tunnel as mitigation, which will eliminate the ground-borne noise impacts for residential land use.

Finding: There will be no vibration impacts to any residential or institutional land uses and none of the ground-borne noise impacts will be in EJ areas. Therefore, there will be no disproportionately high and adverse impacts on EJ populations related to vibration or ground-borne noise.

5.4.1.7 Parking

As described in Section 4.3.3 and summarized in Table 4.0-1, the Project will result in long-term direct and indirect, and short-term impacts to parking. The Project will result in the permanent (i.e., long-term) displacement of approximately 692 private off-street parking spaces at 16 locations, and the displacement of a net total of approximately 57 on-street parking spaces (the Project will add 207 on-street parking spaces at four locations and eliminate 264 on-street parking spaces at 11 locations). The Project will include new park-and-ride lots at nine light rail stations, for a combined addition of approximately 2,487 new park-and-ride spaces. The loss of private off-street parking spaces at 16 locations does not occur in areas with an EJ population, or serve an EJ population. The elimination of 264 on-street parking spaces at 11 locations does not occur in areas with an EJ population, or serve an EJ population.

In order to mitigate potential unauthorized use of on-street and/or off-street parking due to spillover parking, the Council will complete a Regional Park-and-Ride System Report on an annual basis. As part of this effort, the Council and Metro Transit will collaborate with regional transit partners, local governments, and the Minnesota Department of Transportation to conduct an annual regional park-and-ride survey, which will track facility use and emerging travel patterns by park-and-ride users across the region to identify the appropriate mitigation, as needed and where feasible. The results of this survey will be published in the annual report.

Temporary removal of on-street parking spaces could occur at locations to facilitate construction of the Project (e.g., to facilitate truck movement, to provide a temporary truck loading zone). The Council will develop a Construction Mitigation Plan that will address temporary parking impacts during the construction of the Project.

Finding: Based on a review of the distribution of Project-related parking impacts throughout the study area (see Exhibits 4.3-1 and 4.3-2) and after the consideration of parking mitigation to be implemented by the Project, the parking impacts are not disproportionately borne by EJ populations or appreciably more severe than those suffered by non-EJ populations. Therefore, the Project will not have a disproportionately high and adverse impact on EJ populations related to parking.

5.5 Environmental Justice Finding

In summary, the resource specific conclusions are:

- Acquisitions and Displacements: no disproportionately high and adverse impacts on EJ populations
- Cultural Resources: no disproportionately high and adverse impacts on EJ populations
- Parks, recreation areas and open spaces: no disproportionately high and adverse impacts on EJ populations
- Visual resources: no disproportionately high and adverse impacts on EJ populations
- Vibration: no disproportionately high and adverse impacts on EJ populations
- Parking: no disproportionately high and adverse impacts on EJ populations.

While there will be adverse impacts related to the Project (as described in Section 5.4²), they will affect both EJ and non-EJ populations and will not be disproportionately borne by EJ populations. Both EJ and non-EJ populations in the study area will also benefit from the Project. The following is a list of the benefits to both EJ and non-EJ communities in the study area:

- More reliable and higher capacity service for transit riders
- Increased transit service³
- Improved connectivity and access to transit
- Improved mobility through the study area
- Improved pedestrian and bicycle connections and access, particularly in the vicinity of proposed LRT stations
- Improved access to employment, educational, recreational, shopping, and cultural opportunities
- Improved overall health of the users of the Project with improvements and extensions of the trail system (e.g., new grade-separated crossings) and other safety improvements
- Increased employment opportunities due to a greater number of commercial and residential businesses that are planned within the study area, which would result in positive economic gains in the form of increased wages and spending

As part of the community advisory group meetings held during the project development process, representatives from the New American Academy have always spoken positively about the indirect impact of increased development and redevelopment surrounding the proposed Eden Prairie Town Center Station on neighboring populations, as well as the benefit of improved access to jobs, housing, and schools for populations in Eden Prairie. Additionally, representatives from BRCC, and residents from North Minneapolis, Eden Prairie and Hopkins have commented that accessing jobs in the suburban cities, as well as downtown at off peak hours, will be easier and faster, and with longer operating hours.

² Includes both a description of impacts by environmental category and related mitigation measure commitments.

³ The Eden Prairie Town Center Station and associated roadway improvements are deferred and are not expected to be in place when the Project opens in 2020 (see Section 2.1.1). The station and associated roadway improvements are planned to be in place by 2040.

Project-Wide Environmental Justice Finding: The Council and FTA recognize that some of the specific impacts of the Project may adversely affect both EJ and non-EJ populations. Therefore, where appropriate, the Project alignment has been refined through the NEPA process to minimize impacts to both the human and natural environment. Environmental avoidance and minimization commitments and committed mitigation measures identified throughout Chapters 3 and 4 of this Final EIS address adverse impacts from light rail operations and construction activities that will affect both EJ and non-EJ populations.

Taking into account the adverse impacts on EJ populations, committed mitigation measures, and benefits to EJ populations, the Council and FTA have concluded that the Project as a whole would not result in disproportionately high and adverse impacts to EJ populations.

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6 Final Section 4(f) Evaluation

This chapter is the Southwest LRT Project Final Section 4(f) Evaluation, which concludes the project's Section 4(f) process. Previously, Federal Transit Authority (FTA) published the Southwest Transit Draft 4(f) Evaluation in conjunction with the project's Draft Environmental Impact Statement (EIS) and the Southwest LRT Project Draft Section 4(f) Update in conjunction with the project's Supplemental Draft EIS.

Since publication of the Draft Section 4(f) Evaluation Update, this Final Section 4(f) Evaluation reflects the following:

1. Design adjustments to the Project made since publication of the Supplemental Draft EIS;
2. Final Section 106 determinations of effect on historic properties within the Project made by FTA in December 2015, in consultation with the Council, Minnesota Historic Preservation Office (MnHPO), and consulting parties as part of the project's Section 106 assessment of historical and archaeological resources;
3. Publication of the Amended Draft Section 4(f) Evaluation in January 2015, which included preliminary Section 4(f) *de minimis* impact determinations for two newly identified Section 4(f) properties in Minnetonka, Minnesota (i.e., Unnamed Open Space B and the Opus development area trail network);
4. The receipt of public and agency comments on the Draft Section 4(f) Update and the Amended Draft Section 4(f) Update, including FTA's intent to make *de minimis* impact determinations; and,
5. Final determinations for Section 4(f)-protected properties that were preliminary determinations within the Draft Section 4(f) Evaluation Update and the Amended Draft Section 4(f) Evaluation, including non-*de minimis* and *de minimis* impact determinations and temporary occupancy exception determinations.

This chapter includes the following sections:

- 6.1 Summary of the Draft Section 4(f) Evaluation and Draft Section 4(f) Evaluation Update
- 6.2 Changes from the Draft Section 4(f) Evaluation and the Draft Section 4(f) Evaluation Update to the Final Section 4(f) Evaluation
- 6.3 Final Section 4(f) Evaluation Summary
- 6.4 Regulatory Background/Methodology
- 6.5 Purpose and Need
- 6.6 Use of Section 4(f) Properties in the Project Study Area¹
- 6.7 Coordination
- 6.8 Determination of Section 4(f) Use

In summary, this chapter documents FTA's final Section 4(f) use determinations for Section 4(f) properties that will be used or temporarily occupied as a result of the Project. In addition, this chapter documents the analysis of other Section 4(f) properties that will be in proximity to the Project but will not be used by the Project. Appendix I provides additional supporting documentation for this Final Section 4(f) Evaluation.

6.1 Summary of the Draft Section 4(f) Evaluation and Draft Section 4(f) Evaluation Update

This section provides a summary of the Draft Section 4(f) Evaluation, which was published with the Draft EIS, and the Draft Section 4(f) Evaluation Update, which was published with the Supplemental Draft EIS. This summary provides background information supporting the preliminary determinations made in the Draft Section 4(f) Evaluation and the Draft Section 4(f) Evaluation Update. Section 6.2 describes the changes in

¹ For the Section 4(f) property that FTA has determined would have a non-*de minimis* use (Kenilworth Corridor/Grand Rounds Historic District), this chapter includes a No Feasible and Prudent Alternatives Analysis, an All Possible Planning to Minimize Harm finding, and a Least Overall Harm Analysis (see Section 6.6.2.15).

determinations from the Draft Section 4(f) Evaluation, to the Draft Section 4(f) Evaluation Update, to this Final Section 4(f) Evaluation.

6.1.1 Summary of the Draft Section 4(f) Evaluation

Chapter 7 of the Draft EIS included the project's Draft Section 4(f) Evaluation, which was circulated for public and agency review concurrently with the Draft EIS (the comment period closed on December 31, 2012). The Draft Section 4(f) Evaluation was published because most of the alternatives considered at the time would have likely used Section 4(f) protected properties. In addition to other alternatives, the Draft EIS's Draft Section 4(f) Evaluation included an assessment of LRT 3A-1, which was designed to allow for the continued operations of TC&W freight trains currently operating along the Bass Lake Spur and Kenilworth Corridor, similar to the Project. The Draft Section 4(f) Evaluation preliminarily determined at the time of publication that LRT 3A-1 would have resulted in the following² (note that these preliminary data from the Draft Section 4(f) Evaluation have changed, as summarized in Section 6.2):

- A 0.277-acre use of Nine Mile Creek Conservation Area
- A use of the Kenilworth Lagoon (historic property – acreage of use is not specified in the Draft EIS)
- A 0.016-acre temporary occupancy during construction of Park Siding Park (park property)
- A 0.81-acre use of Cedar Lake Park (park property)
- A 0.07-acre use of Cedar Lake Parkway (historic property)

6.1.2 Summary of the Draft Section 4(f) Evaluation Update

Section 3.5 of the Supplemental Draft EIS included the project's Draft Section 4(f) Evaluation Update, which was circulated for public and agency review concurrently with the Supplemental Draft EIS (the comment period closed on July 21, 2015). A Draft Section 4(f) Evaluation Update was prepared and included in the Supplemental Draft EIS because: (1) several aspects of the LPA's proposed design had changed since publication of the Draft Section 4(f) Evaluation, including incorporation of freight rail modifications into the LPA that would retain freight rail service within the Kenilworth Corridor (see Section 2.2 of the Supplemental Draft EIS for additional information); (2) FTA, MnHPO, Minnesota Department of Transportation (MnDOT) Cultural Resources Unit (CRU), and the Council had advanced the project's Section 106 process for historic property, including reaching preliminary determinations of effect; and (3) FTA had advanced the Section 4(f) process, including additional coordination with officials with jurisdiction and reaching a revised set of preliminary Section 4(f) determinations.

FTA's updated preliminary Section 4(f) use determinations within the Draft Section 4(f) Evaluation Update are summarized in Table 3.5-2 of the Supplemental Draft EIS and documented in Section 3.5.4 of the Supplemental Draft EIS. Appendix L of the Supplemental Draft EIS provides supporting Section 4(f) documentation for the Draft Section 4(f) Evaluation Update.

In the Draft Section 4(f) Evaluation Update, FTA preliminarily determined the following:

1. There would be a Section 4(f) non *de minimis* use (0.4 acre) of one historic property (Kenilworth Lagoon/contributing element of the Grand Rounds Historic District);
2. There would be a Section 4(f) *de minimis* use of three park properties (Kenilworth Channel/Lagoon park property [0.3 acre], Cedar Lake Park [0.7 acre], and Bryn Mawr Meadows Park [0.4 acre]) and one historic property (St. Paul, Minneapolis & Manitoba Railroad Historic District [1.5 acre]); and
3. There would be Section 4(f) temporary occupancies of one park (Purgatory Creek Park [0.3 acre]) and two historic properties (Minikahda Club [0.02 acres] and Cedar Lake Parkway [reconstruction of 320 feet of the parkway]).

² The potential for temporary occupancies of the Kenilworth Channel (historic), Cedar Lake Park, Lake of the Isles, and Cedar Lake Parkway were not known at the time of the Draft EIS (see Table 7.4-1 of the Draft EIS).

6.2 Changes from the Draft Section 4(f) Evaluation and the Draft Section 4(f) Evaluation Update to the Final Section 4(f) Evaluation

Table 6.2-1 provides a summary of the changes in Section 4(f) determinations made within this Final Section 4(f) Evaluation, compared to those made for LRT 3A-1 (co-location) in the Draft Section 4(f) Evaluation and the Draft Section 4(f) Evaluation Update.

TABLE 6.2-1

Comparison of FTA's Section 4(f) Property Use Determinations^a in the Draft Section 4(f) Evaluation, Draft Section 4(f) Evaluation Update, and Final Section 4(f) Evaluation

Property	Draft Section 4(f) Evaluation	Draft Section 4(f) Evaluation Update	Final Section 4(f) Evaluation ^b
Purgatory Creek Park	• No Section 4(f) Use	• Preliminary Temporary Occupancy Exception	• Temporary Occupancy Exception
Nine Mile Creek Conservation Area	• <i>De minimis</i> Use	• Not a Section 4(f) Property	• Not a Section 4(f) Property
Unnamed Open Space B	• Not identified as a Section 4(f) Property	• Not identified as a Section 4(f) Property	• <i>De minimis</i> Use ^c
Opus Development Area Trail Network	• Not identified as a Section 4(f) Property	• Not identified as a Section 4(f) Property	• <i>De minimis</i> Use ^c
Minikahda Club	• No Section 4(f) Use	• Preliminary Temporary Occupancy Exception	• Temporary Occupancy Exception
Park Siding Park	• Preliminary Temporary Occupancy Exception	• Temporary Occupancy Avoided	• Temporary Occupancy Avoided
Cedar Lake Parkway/Grand Rounds Historic District ^d	• Section 4(f) Use	• Preliminary Temporary Occupancy Exception	• Temporary Occupancy Exception
Kenilworth Lagoon/Grand Rounds Historic District ^e	• Preliminary Section 4(f) Use	• Preliminary Section 4(f) Use	• Section 4(f) Use
Kenilworth Channel/Lagoon (as an element of the Minneapolis Chain of Lakes Regional Park)	• Not identified as a Section 4(f) Property	• Preliminary <i>de minimis</i> Use	• <i>De minimis</i> Use
Lake of the Isles Park	• Section 4(f) Use	• Section 4(f) Use Avoided	• Section 4(f) Use Avoided
Cedar Lake Park	• Section 4(f) Use	• Preliminary <i>de minimis</i> Use	• Temporary Occupancy Exception
Bryn Mawr Meadows Park	• No Section 4(f) Use	• Preliminary <i>de minimis</i> Use	• <i>De minimis</i> Use
St. Paul, Minneapolis & Manitoba Railroad Historic District	• No Section 4(f) Use	• Preliminary <i>de minimis</i> Use	• <i>De minimis</i> Use

^a See Section 6.4.1 of this Final EIS for definitions of the potential types of Section 4(f) uses.

^b All determinations within the Final Section 4(f) Evaluation are final.

^c The Amended Draft Section 4(f) Evaluation, published in January 2016, included preliminary Section 4(f) *de minimis* impact determinations for Unnamed Open Space B and the Opus development area trail network.

^d Because the Cedar Lake Parkway is a contributing element of Grand Rounds Historic District and because FTA and MnHPO have determined that both properties will be temporarily occupied by the Project, the parkway and the district are assessed together within this Final Section 4(f) Evaluation.

^e Because the Kenilworth Lagoon is a contributing element of Grand Rounds Historic District and both have been determined to be adversely affected by the Project under Section 106, the lagoon and the district are assessed together within this Final Section 4(f) Evaluation.

6.3 Final Section 4(f) Evaluation Summary

In summary, FTA's determination within this Final Section 4(f) Evaluation is that as a result of the Project there will be a Section 4(f) use (non-*de minimis*) of the Kenilworth Lagoon/Grand Rounds Historic District, based on a Section 106 adverse effect finding. This determination was also made as preliminary for Alternative 3A-1 in the Draft Section 4(f) Evaluation and for the LPA in the Draft Section 4(f) Evaluation Update. Further, FTA determines that there is no prudent and feasible alternative to the Section 4(f) use of the Kenilworth Lagoon/Grand Rounds Historic District and that the Project would cause the least overall harm to protected Section 4(f) resources.

In addition to the non-*de minimis* Section 4(f) use of the Kenilworth Lagoon/Grand Rounds Historic District, FTA determines within this Final Section 4(f) Evaluation that:

1. There will be a Section 4(f) *de minimis* impact on four park properties (i.e., Unnamed Open Space B, the Opus development trail network, Kenilworth Channel/Lagoon park property, and Bryn Mawr Meadows Park) and one historic property (i.e., St. Paul, Minneapolis & Manitoba Railroad Historic District); and
2. There will be Section 4(f) temporary occupancies of two park properties (i.e., Purgatory Creek Park and Cedar Lake Park) and two historic properties (i.e., Minikahda Club and Cedar Lake Parkway).

FTA's Section 4(f) use determinations for the Southwest LRT Project are summarized in Table 6.2-2. The rationale for these determinations are documented in Section 6.6 and supporting documentation is provided in Appendix I.

TABLE 6.2-2

Summary of FTA's Final Section 4(f) Property Use Determinations^a

Section 4(f) Property	Property Type	Official with Jurisdiction	Non- <i>de minimis</i> Use	<i>De minimis</i> Use	Temporary Occupancy: No Use
Purgatory Creek Park	Park	City of Eden Prairie			•
Minikahda Club	Historic	MnHPO			•
Cedar Lake Parkway/Grand Rounds Historic District ^b	Historic	MnHPO			•
Kenilworth Lagoon/Grand Rounds Historic District ^c	Historic	MnHPO	•		
Kenilworth Channel/Lagoon (as an element of the Minneapolis Chain of Lakes Regional Park)	Park	MPRB		•	
Cedar Lake Park	Park	MPRB			•
Bryn Mawr Meadows Park	Park	MPRB		•	
St. Paul, Minneapolis & Manitoba Railroad Historic District	Historic	MnHPO		•	

^a See Section 6.4.1 of this Final EIS for definitions of the potential types of Section 4(f) uses.

^b Cedar Lake Parkway is a contributing element of Grand Rounds Historic District. FTA has made a Section 106 determination of no adverse effect to Cedar Lake Parkway.

^c Kenilworth Lagoon is a contributing element of Grand Rounds Historic District. FTA has made a Section 106 determination of adverse effect to Kenilworth Lagoon historic property and Grand Rounds Historic District.

In general, this Final Section 4(f) Evaluation is based on Southwest LRT preliminary engineering plans and design work (see Appendix E). The engineering plans provide design details throughout the corridor, including station designs, site-specific and typical cross sections, and various other design details. Additional information on project-wide elements of the Project are found in Chapter 2, including descriptions of light rail vehicles and ancillary light rail facilities. Section 2.1.1.2 provides an overall summary of construction activities that will occur under the Project. Appendix J includes a variety of conceptual visual renderings of proposed project improvements at various locations throughout the corridor based on the Southwest LRT preliminary engineering plans.

Text and exhibits within Section 6.6 of this Final EIS provide additional detail on proposed Project improvements and construction activities for Section 4(f) properties that would be used by the Project (non-*de minimis* and *de minimis*) and where Section 4(f) properties would be temporarily occupied by the project during construction. The exhibits supplement the preliminary engineering plans by providing additional detail and/or reflecting additional design adjustments, which have resulted from FTA's and the Council's on-going coordination with officials with jurisdiction to avoid, minimize, and mitigate impacts to Section 4(f) properties.

6.4 Regulatory Background/Methodology

Section 4(f) of the United States Department of Transportation (USDOT) Act of 1966, 49 United States Code (U.S.C.) § 303(c) is a federal law that protects publicly owned parks, recreation areas, wildlife and/or

waterfowl refuges, as well as significant historic sites, whether publicly or privately owned. Section 4(f) requirements apply to all transportation projects that require funding or other approvals by the USDOT. As a USDOT agency, FTA must comply with Section 4(f). FTA's Section 4(f) regulations are at 23 Code of Federal Regulations (CFR) Part 774.

This documentation has been prepared in accordance with legislation established under the United States Department of Transportation Act of 1966 (49 U.S.C. § 303; 23 U.S.C. § 138, hereafter referred to as "Section 4(f) and the joint Federal Highway Administration (FHWA)/ FTA regulations for Section 4(f) compliance codified as Title 23 of the Code of Federal Regulations Part 774 (23 CFR Part 774). Additional guidance was obtained from *FHWA Technical Advisory T6640.8A* (FHWA, 1987) and the revised *FHWA Section 4(f) Policy Paper* (FHWA, 2012).

The same methods utilized in the Draft 4(f) Evaluation and Draft Section 4(f) Evaluation Update to identify potential Section 4(f) resources within 350 feet of the proposed light rail alignment and to assess the potential use of those resources have been utilized for this Final Section 4(f) Evaluation (this 350-foot buffer area is referred to herein as the study area). Three hundred fifty feet is the unobstructed screening distance for FTA noise impact assessments, which allows for identification of potential constructive uses of Section 4(f) resources. Maps, aerial photography, and local comprehensive plans were reviewed to determine the location of parks and recreational lands. Cultural resources studies of historical properties for the Southwest LRT Project have been completed under Section 106 of the National Historic Preservation Act (Section 106).

6.4.1 Types of Section 4(f) Properties

Section 4(f) requires consideration of:

- Parks and recreational areas of national, state, or local significance that are both publicly owned and open to the public;
- Publicly owned wildlife and waterfowl refuges of national, state, or local significance that are open to the public to the extent that public access does not interfere with the primary purpose of the refuge; and
- Historic sites of national, state, or local significance in public or private ownership regardless of whether they are open to the public that are listed in, or eligible for, the National Register of Historic Places (NRHP).

6.4.2 Section 4(f) Determinations

Per 23 CFR Part 774.3, FTA cannot approve the use of a Section 4(f) resource, as defined in 23 CFR Part 774.17, unless FTA determines that:

- There is no feasible and prudent avoidance alternative, as defined in 23 CFR Part 774.17, to the use of land from the property, and
- The action includes all possible planning, as defined in 23 CFR Part 774.17, to minimize harm to the property resulting from such use.

6.4.3 Section 4(f) Evaluation Process

After identifying the Section 4(f) properties in the project study area, FTA determined whether and to what extent the Project will use each property. The type of Section 4(f) use was then determined according to the following Section 4(f) use definitions:

- **Permanent Use.** Pursuant to 23 CFR Part 774.17, a permanent use occurs when land from a Section 4(f) property is permanently incorporated into a transportation project. This may occur as a result of partial or full acquisition of the Section 4(f) property, permanent easements, or temporary easements that exceed regulatory limits.
- **Temporary Use.** As defined in 23 CFR Part 774.13(d), a temporary use occurs when there is a temporary use of land that is "adverse in terms of the statute's preservation purpose as determined by the criteria in 23 CFR 774.13(d)." If the criteria in 23 CFR Part 774.13(d) are met, the "temporary use exception"

applies, meaning that the temporary occupancy of the land is so minimal that it does not constitute a “use” within the meaning of Section 4(f). If the criteria in 23 CFR Part 774.13(d) are not met, the use is evaluated as permanent (see Section 6.4.4.2 for a listing of the temporary occupancy criteria).

- **Constructive Use.** As defined in 23 CFR Part 774.15(a), a constructive use occurs when a transportation project does not incorporate land from a Section 4(f) property, but the project’s proximity impacts are so severe that the protected activities, features or attributes that qualify a property for protection under Section 4(f) are substantially impaired.

The primary steps in a Section 4(f) evaluation are described below:

- **Analyze Avoidance Alternatives:** In this step, FTA considers alternatives that completely avoid the use of a Section 4(f) property. The avoidance analysis applies the Section 4(f) feasible and prudent criteria (23 CFR Parts 774.17). An alternative is not feasible if it cannot be built as a matter of sound engineering judgment (2). An avoidance alternative is not considered prudent (3) if:
 - i. It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
 - ii. It results in unacceptable safety or operational problems;
 - iii. After reasonable mitigation, it still causes:
 - (a) severe social, economic, or environmental impacts;
 - (b) severe disruption to established communities;
 - (c) severe disproportionate impacts to minority or low income populations, or
 - (d) severe impacts to environmental resources protected under other Federal statutes;
 - iv. It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
 - v. It causes other unique problems or unusual factors; or
 - vi. It involves multiple factors in paragraphs (3)(i) through (3)(v) of this definition, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.
- **Consider All Possible Planning to Minimize Harm:** After determining that there are no feasible and prudent alternatives to avoid the use of Section 4(f) property, the project approval process for an individual Section 4(f) evaluation requires the consideration and documentation of all possible planning to minimize harm to Section 4(f) property (see 23 CFR Part 774.3(a)(2)). *All possible planning*, defined in 23 CFR Part 774.17, means that all reasonable measures identified in the Section 4(f) evaluation to minimize harm or to mitigate for adverse impacts and effects must be included in the project. All possible planning to minimize harm does not require analysis of feasible and prudent avoidance alternatives, as such analysis will have already occurred in the context of searching for feasible and prudent alternatives that will avoid Section 4(f) properties altogether under 23 CFR Part 774.3(a). Minimization and mitigation measures should be determined through consultation with the official(s) with jurisdiction. Mitigation measures involving public parks, recreation areas, or wildlife or waterfowl refuges may involve replacement of land and/or facilities of comparable value and function, or monetary compensation to enhance remaining land. Mitigation of historic sites usually consists of those measures necessary to preserve the integrity of the site and agreed to in the project’s Section 106 Agreement in accordance with 36 CFR Part 800 by FTA, MnHPO, and other consulting parties.
- **Determine Alternative/s with Least Overall Harm:** If no feasible and prudent alternatives are identified that will avoid using a Section 4(f) property, FTA also determines the alternative that will cause the least overall harm to Section 4(f) properties using the following factors (23 CFR Part 774.3(c)(1)) and the results of considering all possible planning to minimize harm:
 - i. The ability to mitigate adverse impacts to each Section 4(f) property
 - ii. The relative severity of the remaining harm after mitigation

- iii. The relative significance of each Section 4(f) property
- iv. The views of the officials with jurisdiction over each property
- v. The degree to which each alternative meets the project purpose and need;
- vi. The magnitude of adverse effects to resources not protected by Section 4(f)
- vii. Substantial cost differences among the alternatives
- ***Coordinate with Officials with Jurisdiction:*** FTA and the Council have coordinated with the officials with jurisdiction over each of the protected properties for which a determination is made in this Final Section 4(f) Evaluation.

6.4.4 Section 4(f) Use Definitions and Requirements

This section provides definitions of types of potential Section 4(f) uses that are used throughout Section 6 and their related requirements, including: Individual Section 4(f) Evaluation; Temporary Occupancy Exception, *de minimis* Impact Determinations; and Constructive Use.

6.4.4.1 Individual Section 4(f) Evaluation

The term “individual Section 4(f) evaluation” is used in this section to refer to the process of assessing avoidance alternatives, determining the alternative with the least overall harm, and considering all possible planning to minimize harm for each property that will be used by the project and where that use will not be *de minimis*. This analysis is required for all uses of a Section 4(f) property, except in the case of a *de minimis* use determination (*de minimis* use is described below in Section 6.4.4.3).

6.4.4.2 Temporary Occupancy Exception

Temporary occupancies do not constitute a use and are, therefore, not subject to the provisions of Section 4(f) if they meet each of the following five criteria for a temporary occupancy exception found in 23 CFR Part 774.13(d):

- i. Duration of occupancy must be temporary; i.e. less than the time needed for construction of the project, and there can be no change in ownership of the land;
- ii. The scope of work must be minor; i.e., both the nature and magnitude of the changes to the Section 4(f) property are minimal;
- iii. There can be no anticipated permanent adverse physical impacts, nor can there be interference with the activities, features or attributes of the property, on either a temporary or permanent basis; and
- iv. The land being used must be fully restored; i.e. the property must be returned to a condition that is at least as good as that which existed prior to the project
- v. Written concurrence must be obtained from the officials with jurisdiction, documenting agreement with the above conditions. If the official with jurisdiction does not agree in writing with a temporary occupancy exception determination, an analysis of use must be conducted. If concurrence is obtained from the officials with jurisdiction over the properties, a final determination will be made by FTA in the Final Section 4(f) Evaluation, which will be included in the Record of Decision.

6.4.4.3 De Minimis Impact Determinations

A determination of *de minimis* use can be made only if the project will not adversely affect the features, attributes or activities that make the Section 4(f) property significant, after receipt and consideration of public comment, and FTA receives concurrence with the official(s) with jurisdiction. If the official with jurisdiction does not agree with a *de minimis* use determination in writing, an analysis of avoidance alternatives must be conducted. If the analysis concludes that there is no feasible and prudent alternative to use of the Section 4(f) property, FTA may only approve the alternative or alternatives that cause the least overall harm. A least overall harm analysis is conducted to determine which alternative/s may proceed. A *de minimis* use determination is inappropriate where a project results in a constructive use (23 CFR Parts 774.3(b) and 774.17).

- **Parks, Recreation, and Refuges.** A *de minimis* use on a public parkland, recreational area, or wildlife and waterfowl refuge is defined as that which does not “adversely affect the features, attributes or activities qualifying the property for protection under Section 4(f)” (*Section 4(f) Policy Paper*: FHWA, 2012; page 8). This determination can be made only with the concurrence of the official with jurisdiction, and can be made only after an opportunity for public review and comment on the proposed determination.
- **Historic Properties.** As defined in 23 Parts CFR 774.5 and 774.17, a *de minimis* use determination is made for an historic site if FTA makes a finding for a property of “No Adverse Effect” or “No Historic Properties Affected” through consultation under Section 106 of the National Historic Preservation Act (NHPA), and the State Historic Preservation Officer concurs with that finding.

6.4.4.4 Constructive Use

A constructive use involves no actual physical use of the Section 4(f) property via permanent incorporation of land or a temporary occupancy of land into a transportation facility. A constructive use occurs when the proximity impacts of a proposed project adjacent to, or nearby, a Section 4(f) property result in substantial impairment to the property’s activities, features, or attributes that qualify the property for protection under Section 4(f). As a general matter, a substantial impairment means that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. The types of impacts that may qualify as constructive use are addressed in 23 CFR Part 774.15. A project’s proximity to a Section 4(f) property is not in itself an impact that results in constructive use. Also, the assessment for constructive use should be based upon the impact that is directly attributable to the project under review, not the overall combined impacts to a Section 4(f) property from multiple sources over time.

6.5 Purpose and Need

The Southwest LRT Project’s Purpose and Need is included in Chapter 1 of this Final EIS. It is included in this section as reference for the Final Section 4(f) Evaluation.

6.5.1 Project Purpose

The purposes of enhancing transit service in the Southwest LRT Project Corridor (which is defined and illustrated in Section 1.4) are summarized below:

- The Southwest LRT Project will improve access and mobility to the jobs and activity centers in the Minneapolis central business district, as well as along the entire length of the corridor for reverse-commute trips to the expanding suburban employment centers.
- The Southwest LRT Project will provide a competitive, cost-effective travel option that will attract choice riders to the transit system. The competitive and reliable travel time for the Southwest LRT Project is attributed to the diagonal nature of the line compared to the north-south/east-west orientation of the roadway network and to the increasing levels of congestion of the roadway network.
- The Southwest LRT Project will be part of the region’s system of transitways, integrated to support regional transportation efficiency. Since the late 1990s, the Southwest LRT Project has been identified by the Council as warranting a high level of transit investment to respond to increasing travel demand in a highly congested area of the region. Due to congestion levels on the roadway network, speed and use limitations of the shoulder bus operations, and capacity constraints in downtown Minneapolis, a bus option is limited in its ability to adequately serve the travel demand and to provide reliable travel times.

6.5.2 Project Need

The transportation issues facing the Southwest LRT Project Corridor illustrate the need for improved mobility, accessibility, and system linkages to key activity centers (Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and downtown Minneapolis) through high-capacity transit service. The Southwest LRT Project is one of several transit corridors identified in the Council’s 2040 Transportation Policy Plan as being in need of enhanced transit service. The Southwest LRT Project Corridor continues to experience increases in population and employment with limited additional traffic capacity on existing streets and highways, resulting in increased travel time, delays, and air pollution. Portions of the Southwest LRT Project Corridor

are already densely developed. New development and redevelopment in areas of the corridor are expected to generate increases in travel demand.

Four primary need factors make the Southwest LRT Project important for people who live and work in the southwest metropolitan area: (1) declining mobility; (2) limited competitive, reliable transit options for choice riders and people who rely on public transportation, including reverse-commute riders; (3) need to maintain a balanced and economically competitive multimodal freight system; and (4) regional/local plans calling for investment in additional light rail transit projects in the region.

Chapter 1 of this Final EIS provides additional information on the need for the proposed Southwest LRT Project.

6.6 Section 4(f) Properties in the Project Study Area

This section addresses the Section 4(f) properties within the project's Section 106 Area of Potential Effect and within the project's park and recreation study area. The 35 Section 4(f) properties that are evaluated within this section are listed and briefly described in Table 6.6-1 and their locations are illustrated on Exhibits 6.6-1 through 6.6-2A/B. Section 6.6.1 addresses 12 publicly owned park and recreation areas. Section 6.6.2 addresses 28 Section 106 historic properties. No wildlife or waterfowl refuges were identified within 350 feet of the proposed Project alignment centerline and therefore, there are no wildlife or waterfowl refuges addressed in this section.

Per the Section 106 analysis performed for the Project, there are two NRHP-eligible archaeological sites in the Project study area (Site 21HE0436 and Site 21HE0437)³ that will be adversely affected by the Project. However, analysis performed and subsequent consultation with MnHPO has resulted in a determination that these archaeological sites are important chiefly because of what can be learned by data recovery and have minimal value for preservation in place. Based on this assessment, per 23 Part CFR 774.13(b), Section 4(f) does not apply to these two archaeological sites.

TABLE 6.6-1
Section 4(f) Properties Evaluated in this Final Section 4(f) Evaluation

Property Name	Property Type	Location	Official with Jurisdiction	Section 4(f) Qualifying Description ^a
Parks and Recreational Areas				
Purgatory Creek Park	Park	13001 Technology Drive, Eden Prairie	City of Eden Prairie	5.2 acre park
Flying Cloud Dog Park	Park	7171 Flying Cloud Drive, Eden Prairie	City of Eden Prairie	9.3 acre park
Unnamed Open Space B	Park	Located generally south of Smetana Rd, west of Green Circle Dr, north of Bren Rd W, east of Claremont Apartments	City of Minnetonka	49.0 acre open space
Opus Development Area Trail Network	Park	Located generally between Smetana Road to the north, Hwy 169 to the east, Highway 62 to the south and Shady Oak Road to the west	City of Minnetonka	9.6 acre recreational trails
Overpass Skate Park	Park	100 Washington Ave S, Hopkins	City of Hopkins	0.4 acre park
Edgebrook Park	Park	3920 Pennsylvania Avenue South, St. Louis Park	City of St. Louis Park	1.3 acre park
Isaak Walton League Creekside Park	Park	7341 Oxford Street, St. Louis Park	City of St. Louis Park	1.8-acre park
Jorvig Park	Park	6210 West 37th Street, St. Louis Park	City of St. Louis Park	0.6 acre park
Lilac Park	Park	Located at Hwy 7 Service Road & Hwy 100 in St. Louis Park	City of St. Louis Park	2.7 acre park
Alcott Triangle	Park	At St. Louis Avenue and West 29th Street, Minneapolis	MPRB	0.3 acre park

³ FTA does not disclose the location of archeological sites to help protect their integrity.

Property Name	Property Type	Location	Official with Jurisdiction	Section 4(f) Qualifying Description ^a
Park Siding Park	Park	3113 28th Street West, Minneapolis	MPRB	1.4 acre park
Kenilworth Channel/ Lagoon (an element of the Minneapolis Chain of Lakes Regional Park)	Park	Located between Cedar Lake and Lake of the Isles	MPRB	10.3 acre park
Cedar Lake Park	Park	Located at Cedar Lake Parkway and Basswood Road in Minneapolis	MPRB	208.4 acre park
Bryn Mawr Meadows Park	Park	601 Morgan Avenue South, Minneapolis	MPRB	51.6 acre park
Historic properties				
Hopkins City Hall	Individual Historic Property	1010 1st Street in Hopkins; MnHPO Inventory# HE-HOC-026	MnHPO	Eligible for NRHP
Hopkins Downtown Commercial Historic District	Historic District	Located along Mainstreet between 8th Avenue and 11th Avenue in Hopkins; MnHPO Inventory# HE-HOC-027	MnHPO	Eligible for NRHP
Minneapolis and St. Louis Railway Depot	Individual Historic Property	9451 Excelsior Boulevard in Hopkins; MnHPO Inventory# HE-HOC-014	MnHPO	Eligible for NRHP
Chicago, Milwaukee, St. Paul & Pacific RR Depot	Individual Historic Property	6210 West 37th Street in St. Louis Park; MnHPO Inventory# HE-SLC-008	MnHPO	Listed on NRHP
Peavey-Haglin Experimental Concrete Grain Elevator	Individual Historic Property	Hwy 100 and Hwy 7 in St. Louis Park; MnHPO Inventory# HE-SLC-009	MnHPO	Listed on NRHP; National Historic Landmark
Hoffman Callan Building	Individual Historic Property	3907 TH 7 in St. Louis Park; MnHPO Inventory# HE-SLC-055	MnHPO	Eligible for NRHP
Minikahda Club	Individual Historic Property	3205 Excelsior Boulevard in Minneapolis; MnHPO Inventory# HE-MPC-17102	MnHPO	Eligible for NRHP
Grand Rounds Historic District (GRHD)	Historic District	Minneapolis; MnHPO Inventory# XX-PRK-001	MnHPO	Eligible for NRHP
Lake Calhoun	Contributing Element to Historic District	Minneapolis; MnHPO Inventory# MPC-1811	MnHPO	Contributing element to GRHD
Lake of the Isles	Contributing Element to Historic Districts	Minneapolis; MnHPO Inventory# MPC-1824	MnHPO	Contributing element to GRHD and to LIRHD
Lake of the Isles Parkway	Contributing Element to Historic Districts	Minneapolis; MnHPO Inventory# MPC-1825	MnHPO	Contributing element to GRHD and to LIRHD
Park Bridge No. 4/L5729	Historic Property and Contributing Element to Historic Districts	W. Lake of the Isles Parkway over Kenilworth Lagoon in Minneapolis; MnHPO Inventory# HE-MPC-6901	MnHPO	Eligible for NRHP and contributing element to GRHD and LIRHD
Lake of the Isles Residential Historic District (LIRHD)	Historic District	Minneapolis; MnHPO Inventory# HE-MPC-9860	MnHPO	Eligible for NRHP
Cedar Lake Parkway	Contributing Element to Historic District	Minneapolis; MnHPO Inventory# MPC-1833	MnHPO	Contributing element to GRHD
Cedar Lake	Individual Historic Property and Contributing Element to Hist. District	Minneapolis; MnHPO Inventory# MPC-1820	MnHPO	Eligible for NRHP; contributing element to GRHD
Kenilworth Lagoon ^b	Contributing Element to Hist. Districts	Minneapolis; MnHPO Inventory# MPC-1822	MnHPO	Contributing element to GRHD and to LIRHD
Frieda and Henry J. Neils House	Individual Historic Property	2801 Burnham Blvd, Minneapolis; MnHPO Inventory# HE-MPC-6068	MnHPO	Listed on NRHP

Property Name	Property Type	Location	Official with Jurisdiction	Section 4(f) Qualifying Description ^a
Mahalia & Zachariah Saveland House	Individual Historic Property	2405 W 22nd Street, Minneapolis; MnHPO Inventory# HE-MPC-6766	MnHPO	Eligible for NRHP
Frank W. and Julia C. Shaw House	Individual Historic Property	2036 Queen Ave S, Minneapolis; MnHPO Inventory# HE-MPC-6603	MnHPO	Eligible for NRHP
Kenwood Parkway	Contributing Element to Historic Districts	Minneapolis; MnHPO Inventory# MPC-1796	MnHPO	Contributing element to GRHD and the KPRHD
Kenwood Park	Contributing Element to Historic District	Minneapolis; MnHPO Inventory# MPC-1797	MnHPO	Contributing element to GRHD
Kenwood Parkway Residential Historic District (KPRHD)	Historic District	Minneapolis; MnHPO Inventory# HE-MPC-18059	MnHPO	Eligible for NRHP
Kenwood Water Tower	Individual Historic Property and Contributing Element to Hist. District	1724 Kenwood Pkwy, Minneapolis; MnHPO Inventory# MPC-06475	MnHPO	Eligible for NRHP; contributing element to GRHD
Mac Martin House	Individual Historic Property	1828 Mt. Curve Ave, Minneapolis; MnHPO Inventory# HE-MPC-8763	MnHPO	Eligible for NRHP
St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District	Historic District	Minneapolis; MnHPO Inventory# HE-MPC-16387	MnHPO	Eligible for NRHP
Osseo Branch Line of the St. Paul, Minneapolis & Manitoba RR/Great Northern Railway Historic District	Historic District	Minneapolis; MnHPO Inventory# HE-RRD-002 (district), HE-MPC-16389 (portion of district in Minneapolis)	MnHPO	Eligible for NRHP
Minneapolis Warehouse Historic District	Historic District	Located in the vicinity of 1st Avenue N., N. 1st. Street., 10th Avenue N., and N. 6th Street in Minneapolis; MnHPO Inventory# HE-MPC-0441	MnHPO	Eligible for NRHP
William Hood Dunwoody Institute	Individual Historic Property	818 Dunwoody Boulevard in Minneapolis; MnHPO Inventory# HE-MPC-6641	MnHPO	Eligible for NRHP

^a All listed parks are publicly owned, publicly accessible and of local significance.

^b Includes topographical features, vegetation and WPA-era retaining walls.

Acronyms: MPRB = Minneapolis Park and Recreation Board; MnHPO = Minnesota Historic Preservation Officer; NRHP = *National Register of Historic Places*.

EXHIBIT 6.6-1

Section 4(f) Properties within the vicinity of the Proposed Project – Eden Prairie, Minnetonka, and Hopkins

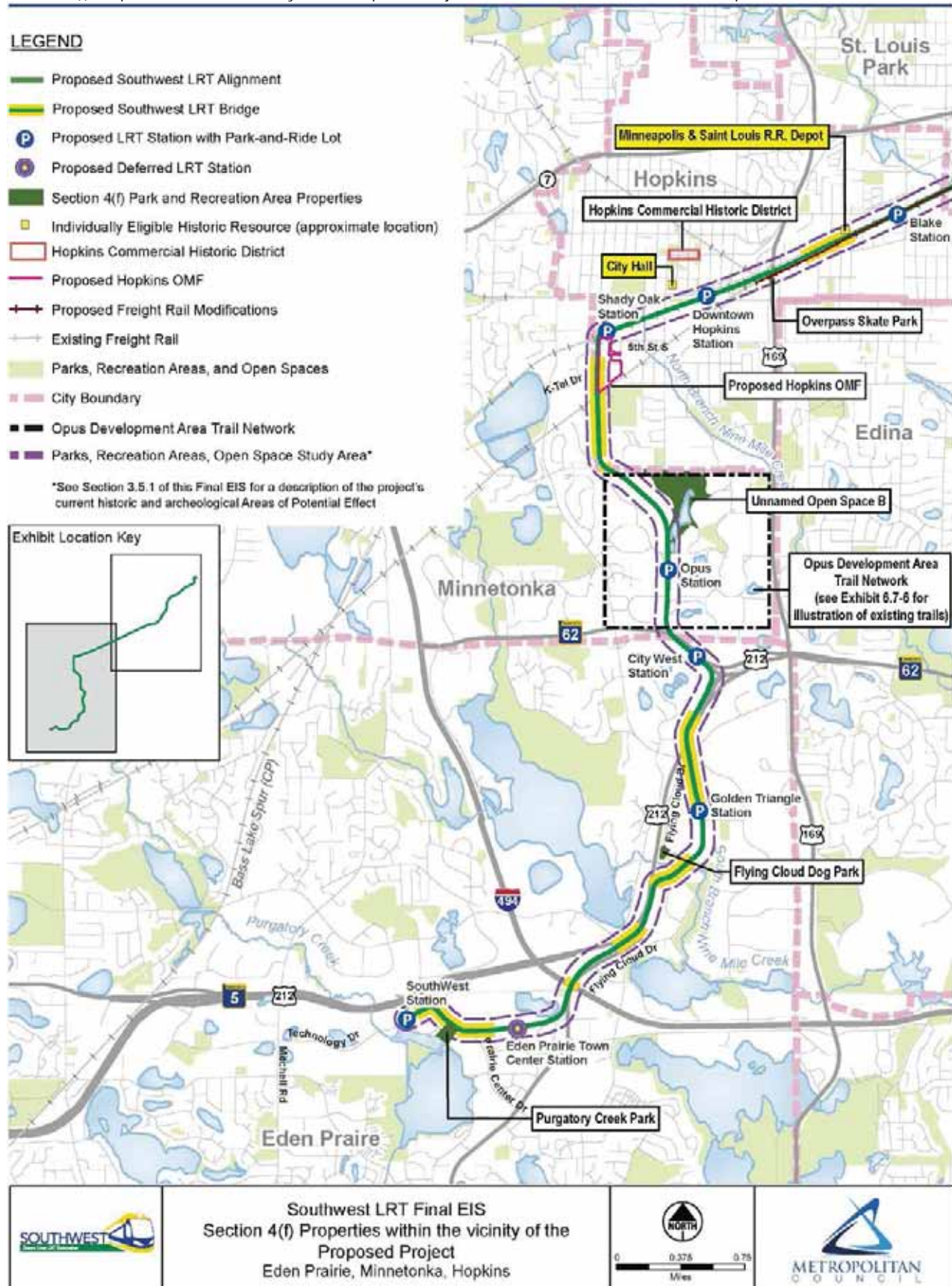


EXHIBIT 6.6-2A

Section 4(f) Properties within the vicinity of the Proposed Project – St. Louis Park and Minneapolis

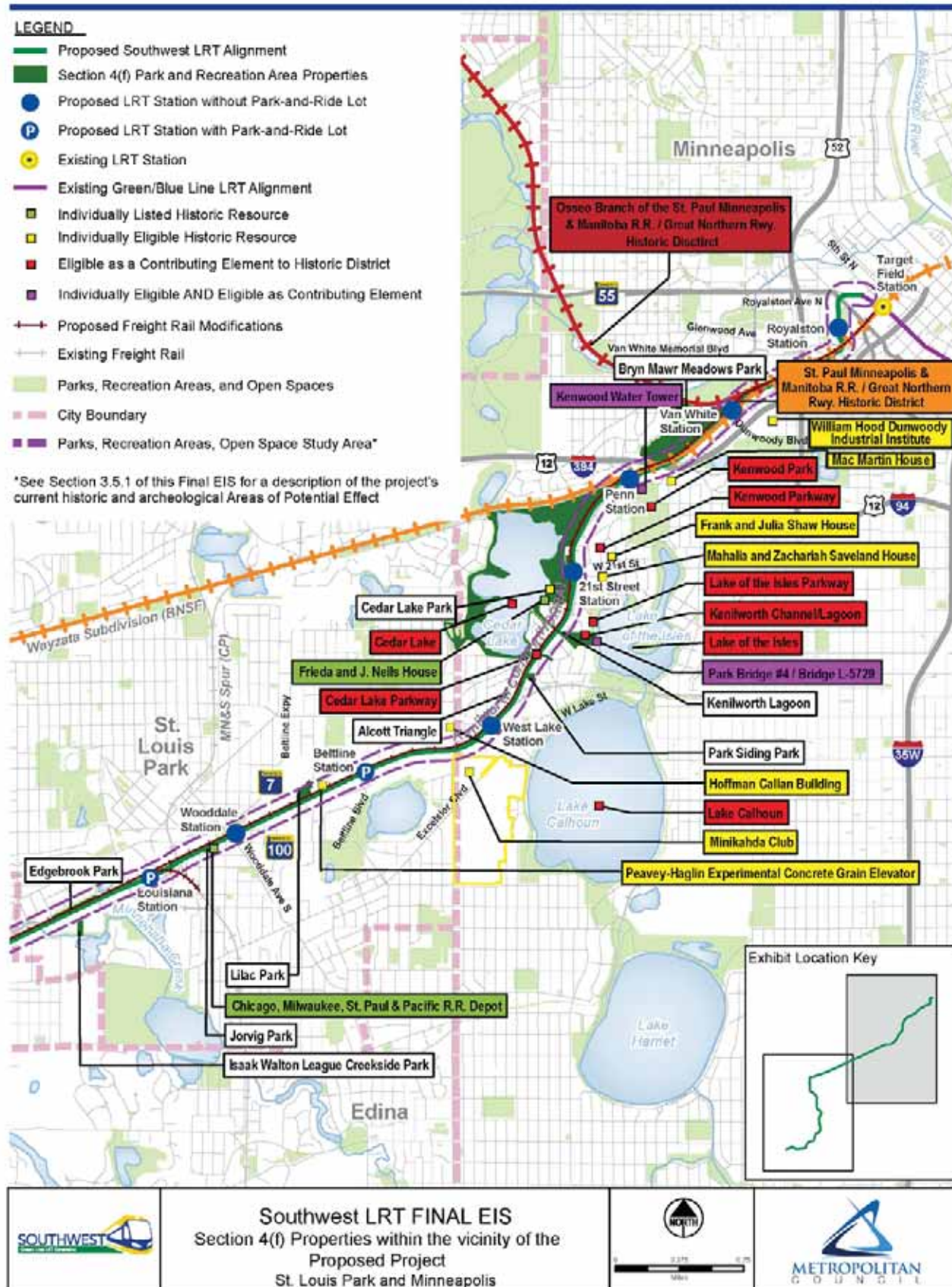
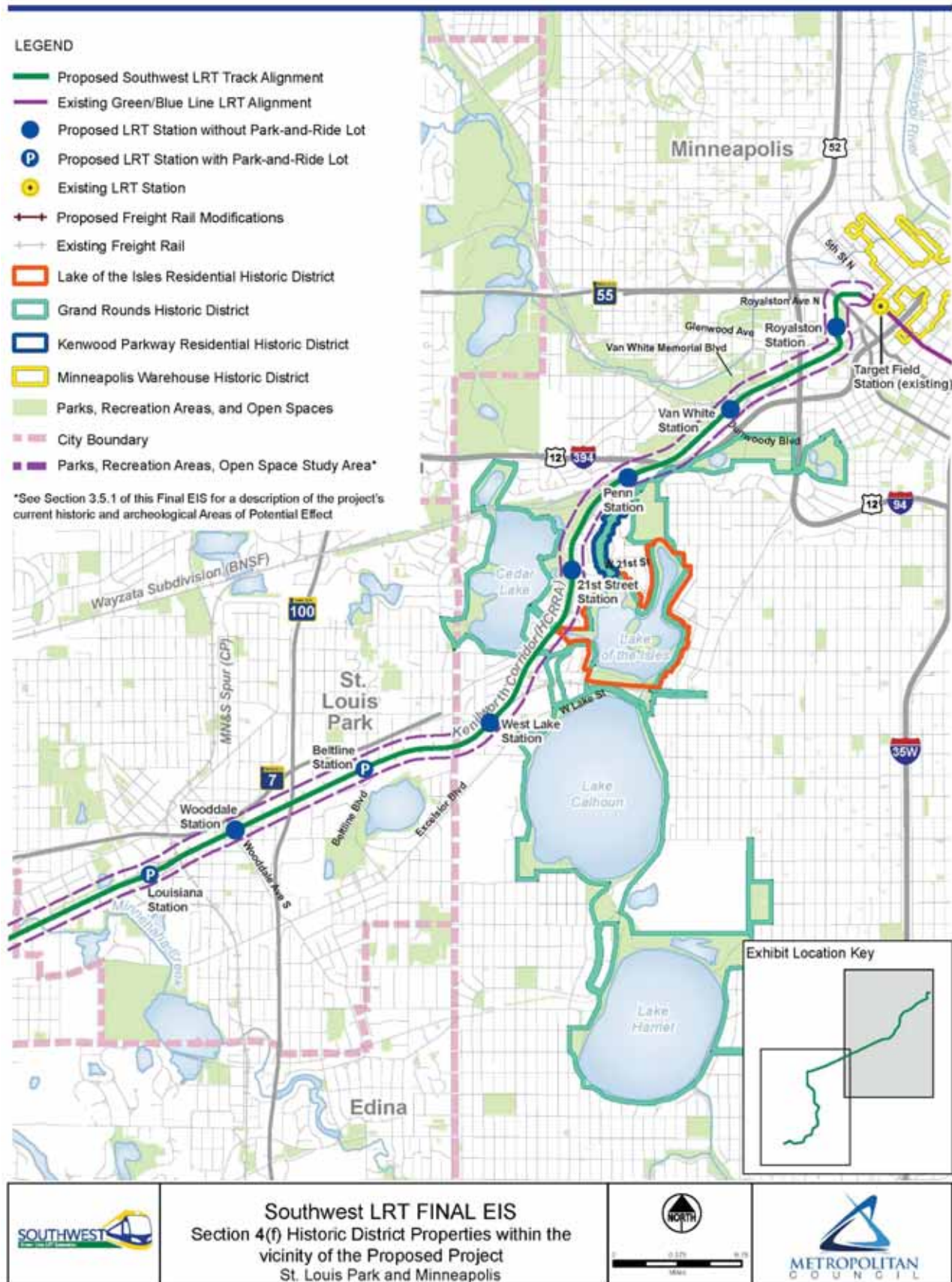


EXHIBIT 6.6-2B

Section 4(f) Historic District Properties within the vicinity of the Proposed Project – St. Louis Park and Minneapolis



6.6.1 Publicly Owned Parks and Recreational Areas

Exhibits 6.6-1 through 6.6-2A/B illustrate the location of Section 4(f) park and recreation area properties in the Project study area. Table 6.6-1 lists the resource name, location, and jurisdictional owner. Table 6.6-2 summarizes FTA's Section 4(f) use determinations for each of the Section 4(f) park and recreation properties within the Project's study area. Table 6.6-2 also includes how many acres, if any, of the property will be used under the Project (compared to the property's acreage). Park and recreation properties are generally listed from south-to-north in the Project study area.

TABLE 6.6-2

Summary of Permanent Section 4(f) Park and Recreational Property Uses^a

Section 4(f) Property	Non- <i>de minimis</i> Use	<i>De minimis</i> Use	No Use	Existing Property Acreage	Acres Permanently Used	% of Property Used
Purgatory Creek Park			• ^b	5.2	0.0	0.0%
Flying Cloud Dog Park			•	9.3	0.0	0.0%
Unnamed Open Space B		•		49.0	1.0	2.0%
Opus Development Area Trail Network		•		9.6	0.0 ^c	0.0% ^a
Overpass Skate Park			•	0.4	0.0	0.0%
Edgebrook Park			•	1.3	0.0	0.0%
Isaak Walton League Creekside Park			•	1.8	0.0	0.0%
Jorvig Park			•	0.6	0.0	0.0%
Lilac Park			•	2.7	0.0	0.0%
Alcott Triangle			•	0.3	0.0	0.0%
Park Siding Park			•	1.4	0.0	0.0%
Kenilworth Channel/Lagoon (as an element of the Minneapolis Chain of Lakes Regional Park)		•		10.3	0.3	0.3%
Cedar Lake Park ^d			•	208.4	0.0	0.0%
Bryn Mawr Meadows Park		•		51.6	0.4	0.1%

^a See Section 6.4.1 of this Final EIS for definitions of the potential types of Section 4(f) uses.

^b Purgatory Creek Park will be temporarily used by the project during construction of the Southwest LRT Project. FTA has determined that this temporary use meets the criteria for a Temporary Occupancy Exception under 23 CFR Part 774.13(d) and the City of Eden Prairie, the park's official with jurisdiction, has concurred in writing with that determination.

^c Approximately 1.5 acres of the Opus development area trail network will be removed due to the Project, which will be replaced with approximately 1.8 acres of new trails with the same connections and functions, for a net increase of 0.3 acre of additional trail area within the Opus development area trail network.

^d Cedar Lake Park will be temporarily used by the project during construction of the Southwest LRT Project. FTA has determined that this temporary use meets the criteria for a Temporary Occupancy Exception under 23 CFR Part 774.13(d) and the Minneapolis Park and Recreation Board, the park's official with jurisdiction, has concurred in writing with that determination.

All acreages in this table are approximate.

The following properties in the Project study area not considered Section 4(f) park/recreation properties:

- Unnamed Open Space A is composed of one generally naturally vegetated parcel (approximately 3.0 acres). Unnamed Open Space A is located immediately east of Bren Road E. This parcel's official plan designation in the City Minnetonka 2030 Comprehensive Plan (Figure IV-15) is "Mixed Use" (and not "Parks" or "Open Space").⁴ A paved trail, which is part of the Opus development area trail network, (see Section 6.1.2) crosses the parcel in an east-west manner at a point approximately 830 feet north of the intersection of Bren Road East and Red Circle Drive. Based on deed/title information on this property there are no park/recreation-related easements or other park/recreational legal agreements attached to this property. Further, there is no deed covenant restricting the future use of this parcel to "parkland" or "open space." Therefore, FTA does not consider Unnamed Open Space A to be a Section 4(f) property.
- The Grand Rounds National Scenic Byway consists of a network of roadways that encircle Minneapolis; it includes various parkways and connects several regional parks and trails.⁵ The Grand Rounds National Scenic Byway was designated a National Scenic Byway by the FHWA in 1998. The designation of a road as a scenic byway is not intended to create a park or recreation area within the meaning of 49 U.S.C. § 303 or 23 U.S.C. § 138. Therefore, the Grand Rounds National Scenic Byway as a roadway is not identified as a Section 4(f) resource in regards to park and recreational lands. Four Section 106 historic parkways that are included within the Grand Rounds Byway (i.e., Cedar Lake, Kenwood, Lake of the Isles, and Dean Parkways) are within the Project's Section 106 architectural area of potential effect and are addressed in Section 6.6.
- The existing trails adjacent to the Project (Cedar Lake Trail, Kenilworth Trail, Cedar Lake LRT Regional Trail, and Minnesota Bluffs LRT Regional Trail) were constructed on Hennepin County Regional Railroad Authority (HCRRA) property under temporary agreements between HCRRA and trail permittees. As documented in each trail's interim use agreements in Appendix I of this Final EIS, HCRRA permitted these trails as temporary uses with the stipulation that they may be used until HCRRA develops the corridor for a LRT system or other permitted transportation use; therefore, these trails are not subject to protection as Section 4(f) property (as per 23 CFR Part 774.11[h]). See Section 4.5 of this Final EIS for more information on the referenced trails.
- In addition to the previously mentioned trails within HCRRA, project staff also identified trails, paths, bikeways, and sidewalks that fall within the project's park and recreation area study area but that are located outside of the boundaries of parks and recreation areas. The identified trails, paths, bikeways, and sidewalks are exempt from Section 4(f) because they: (1) occupy a transportation facility right-of-way without limitation to any specific location within that right-of-way, and the continuity of the trail, path, bikeway, or sidewalk will be maintained under the Project, as per 23 CFR Parts 774.13(f)(3); and/or (2) they are part of the local transportation system and function primarily for transportation purposes, as per 23 CFR Part 774.13(f)(4); please see Section 4.5 of this Final EIS for more information on these bicycle/pedestrian facilities.
- Section 4(f) was found to not apply to the Nine Mile Creek Conservation Area within the project study area because its primary purpose is not as a park or recreation area but rather as a conservation area that is not a designated wildlife or waterfowl refuge. The *Eden Prairie Comprehensive Guide Plan* (City of Eden Prairie; 2008) is the master planning document for the Nine Mile Creek Conservation Area (there is

⁴ Figure IV-1 – Existing Land Use in the City of Minnetonka's 2030 Comprehensive Plan shows that the existing use of this parcel as "Open Space." The Comprehensive Plan notes that the Existing Land Use map (and corresponding table showing gross acreage of existing use by land use category) is provided as "a 'benchmark' for the development of previous and future land use planning activities, and for the analysis of impacts on city services and facilities" (City of Minnetonka; page IV-4).

⁵ For a map of the Ground Rounds Scenic Byway and for additional information on the byway, see <http://www.fhwa.dot.gov/byways/byways/2243>.

no adopted master plan specifically for the Nine Mile Creek Conservation Area). The *Comprehensive Guide Plan* (page 7-10) notes that Eden Prairie's "conservation areas consist of large floodplain preservation areas, wetlands, bluffs and sensitive woodland areas . . . [that] have some limited active passive recreation facilities . . . [and that] consist of large wetland/floodplain preservation areas." The plan does not cite wildlife or waterfowl or their habitat in the purpose of the conservation areas and there is no specific adopted management plan for the Nine Mile Creek Conservation Area. Based on the City of Eden Prairie's adopted *Comprehensive Guide Plan* and on 23 CFR Part 774.11, FTA has determined that Section 4(f) protection is not applicable to the Nine Mile Creek Conservation Area because its primary purpose is not recreation or to provide a refuge for wildlife or waterfowl refuge and it is not managed as such.

Following is a description of the 12 Section 4(f) park and recreation properties within the Project's park and recreation study area (generally from south to north), including:

- A description of the Section 4(f) property;
- A Section 4(f) permanent use determination;
- A Section 4(f) temporary use determination/temporary occupancy exception determination (for those properties that will not have a Section 4(f) use or a Section 4(f) *de minimis* use);
- A Section 4(f) constructive use determination (for those properties that will not have a Section 4(f) use); and
- An overall Section 4(f) determination.

6.6.1.1 Purgatory Creek Park – Temporary Occupancy Exception/No Section 4(f) Use

A. Section 4(f) Property Description

Located at 13001 Technology Drive, Purgatory Creek Park contains a 125 person-capacity pavilion (for active recreation activities), bicycle and walking trails, the Mayor Jean Harris Gathering Bridge, gardens, a dock, a fountain, the Eden Prairie Veterans' Memorial (which is a quiet and contemplative area of the park), the Lambert Pavilion, a 54-space parking lot, and restrooms (see Exhibit 6.6-3). The approximately 5.2 acre park is bordered on two sides by Technology Drive and Prairie Center Drive, and on the remaining two sides by a business center parking lot and by Purgatory Creek reservoir. The park is accessible, free of charge, to the public all days of the year, from dawn to dusk. Events at the memorial, which is within the park, include an annual Memorial Day celebration that highlights honoring specific Eden Prairie veterans. The park's parking lot is accessed via Technology Drive and via Prairie Center Drive, through the adjacent business center's parking lot. Bicycle and pedestrian access to the park is provided by connections to city sidewalks and off-street trails. The park is owned by the City of Eden Prairie and is maintained and operated by the city's Park and Recreation Department. Consultation between city and project staff on design issues related to the park has occurred throughout the design refinement process that occurred after publication of the Draft EIS. In addition, project staff held a meeting with city staff focused on Purgatory Creek Park, the Section 4(f) process and documentation, and FTA's determination for the park on February 20, 2015.⁶ Although the park's setting is primarily urban/suburban, there are also views of natural areas to the Southwest. As the park is a publicly owned, publicly accessible park of local significance, Purgatory Creek Park is considered by FTA to be a Section 4(f) protected property.

B. Determination of Permanent Section 4(f) Use

As illustrated on Exhibit 6.6-3, the Project will not result in a permanent incorporation of land from Purgatory Creek Park; therefore, there will not be a Section 4(f) permanent use of the property.

⁶ See Section 6.7 for a project-wide description of the FTA's and the Council's Section 4(f) consultation process and activities.

EXHIBIT 6.6-3

Final Section 4(f) Evaluation – Purgatory Creek Park



C. Determination of Temporary Occupancy Exception

The Project will require a temporary occupancy of approximately 0.3 acres along the northeastern edge of Purgatory Creek Park to facilitate Project construction activities (see Exhibit 6.6-3). Section 4(f) temporary occupancy exception criteria are addressed below with respect to the construction impacts at Purgatory Creek Park:

1. **Criterion:** *Duration is temporary (that is, the occupancy is shorter than the time needed for construction of the project, and there is no change in ownership of the property).*

Finding: The overall duration of construction for the entire project is approximately four years. The duration of the construction activities for the portion near Purgatory Creek Park is estimated to extend up to 24 calendar months – additional time may be needed for restoration activities within the park, depending on variables, such as seasonal timing of the activities and weather conditions. There will be no change in ownership of the parkland that will be temporarily occupied.

2. **Criterion:** *Scope of work is minor (that is, the nature and magnitude of the changes to the Section 4(f) properties are minimal).*

Finding: The part of Purgatory Creek Park to be temporarily occupied during construction includes a portion of the park's access path from the intersection of Technology Drive and Prairie Center Drive as well as the park's secondary parking lot access. Pedestrians entering from the Technology Drive/Prairie Center Drive intersection will be provided a temporary pedestrian path detour. The park will still be accessible to the public throughout construction for vehicles, bicycles, and pedestrians via the main driveway off Technology Drive and also for bicycles and pedestrians via the respective off-street sidewalk paths located adjacent to the west side of Prairie Center Drive and north side of Technology Drive. The part of the park to be temporarily occupied also includes an open grass landscaped area and a portion of the park driveway; this part of the park does not contain any recreational features or amenities. There will be no permanent change to Purgatory Creek Park as a result of project actions.

3. **Criterion:** *There are no anticipated permanent adverse physical impacts or permanent interference with the protected activities, features, or attributes of the property.*

Finding: None of the aforementioned activities, features, or attributes of Purgatory Creek Park will be permanently impacted nor will temporary construction actions at the park permanently or temporarily interfere with visitors utilizing the park as they do currently. Council staff will coordinate construction activities with park staff from the City of Eden Prairie to schedule construction activities so that they avoid park activities identified by the city that should be considered when setting the schedule for construction activities. As illustrated in Exhibit 6.6-3, vehicular access to/from the park will be maintained in the southeast corner of the temporary occupancy area (i.e., approximately 1,400 square feet), with only short closures needed to safely complete some construction activities (e.g., beam placement). Impacts related to temporary changes to parking and access will be mitigated by development of a Construction Communication Plan, which will include advance notice of construction activities and highlighting road, sidewalk, and trail closures and detour routes. There will be no construction impact within Purgatory Creek Park to the functionality of the loop trail around the Purgatory Creek reservoir and wetland area.

4. **Criterion:** *The property is restored to the same or better condition that existed prior to the project.*

Finding: The portion of the park to be temporarily occupied during construction will be restored to existing conditions or better – this includes the previously described pedestrian path, landscaped area (including signage and lighting) and secondary parking lot driveway access.

5. **Criterion:** *There is documented agreement from the appropriate federal, state, or local officials having jurisdiction over the property regarding the above conditions.*

Finding: FTA and Council staff met with City of Eden Prairie staff on February 20, 2015, to review the project's construction plan for Purgatory Creek Park. As a result of the meeting, modifications to the plan were made by the Council, as reflected in this assessment and in Exhibit 6.6-3 (see Appendix I for

meeting notes and materials). Those modifications included bifurcating the area of construction activities within the park into two categories – one larger area for the full duration of the construction activities within the park and the other of intermittent construction activities. The modifications to the plan were made to minimize closures to the eastern vehicular access to the park's parking lot.

The City of Eden Prairie has agreed in writing that the above temporary occupation exception criteria are met by the Project (see Appendix I).

D. Determination of Constructive Section 4(f) Use

Although the sound of passing light rail trains will be audible from within the park, this increased sound will not constitute an impact based on FTA's noise threshold criteria. As discussed in Section 3.12 of this Final EIS, the war memorial within the park is considered to be a sensitive noise receptor (Category 3). The detailed noise analysis performed for this Final EIS indicates that noise levels at the war memorial within the park will not exceed FTA's noise impact criteria (i.e., noise levels under the Project at the war memorial will be 47 A-weighted decibels, which is under the criteria of 60 A-weighted decibels for a moderate noise impact for a Category 3 land use – see Section 3.12 of this Final EIS for additional detail).

Changes in development density in areas surrounding proposed light rail stations could result in an increase in Purgatory Creek Park usage, which could have potential for both positive and negative consequences.

The Project will also result in changes to the park's setting and a visitor's visual experience, resulting in a moderately low and low impact to views into and from the park, respectively. In particular, some users' visual experiences could be perceived as adversely affected by the introduction of the elevated light rail structure immediately east of the park, as discussed in Section 3.7 of this Final EIS. However, the visual changes and impacts will not alter or impair the overall use or function of the park. The design of the new light rail bridge adjacent to the park has been prepared based on the Council's *Visual Quality Guidelines for Key Structures* (Council, 2015), which was developed in coordination with staff from local jurisdictions affected by the Project's proposed key structures. These guidelines allow for a consistent design approach for the key structures, allowing for design adjustments reflecting their local context, including Purgatory Creek Park. Prior to construction of the proposed new light rail bridge, the Council will conclude its consultation with the City of Eden Prairie on the design of the proposed new bridge.

As illustrated on Exhibit 6.6-3, an elevated section of the light rail alignment is to be located adjacent to the northeast boundary of Purgatory Creek Park, avoiding any long-term direct impacts to the park. Permanent improvements will be contained within the existing right-of-way of Prairie Center Drive. Throughout the project's design process, project staff consulted with the City of Eden Prairie, the park owner, on design adjustments to the proposed light rail alignment and associated facilities within the vicinity of the park. Existing bicycle, pedestrian, and vehicular access to the park will be maintained under the proposed Project. The proposed SouthWest Station is within walking distance of Purgatory Creek Park, thereby providing improved transit access to the park.

In summary, the proximity impacts of the Project on Purgatory Creek Park will not substantially impair the qualifying activities, features, or attributes of the park and, therefore, FTA has determined that there will be no Section 4(f) constructive use of Purgatory Creek Park under the Project, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent Section 4(f) use of Purgatory Creek Park and that proposed construction activities within the park will meet the criteria for a Temporary Occupancy Exception described in 23 CFR Part 774.13(d).

6.6.1.2 Flying Cloud Dog Park – No Section 4(f) Use Determination

A. Section 4(f) Property Description

Located at 7171 Flying Cloud Drive, Eden Prairie, Flying Cloud Dog Park is approximately one-acre fenced park that provides year-round use by dogs and dog owners. The fenced area includes a section for small or fragile dogs and a larger area for big dogs. The park includes a small parking lot, obstacle equipment for

dogs, benches, and a portable toilet. The park is owned and managed by the City of Eden Prairie. As the park is a publicly owned, publicly accessible park of local significance, Flying Cloud Dog Park is considered by FTA to be a Section 4(f) protected property.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans and see Exhibit 6.6-4, the Project will not result in a permanent incorporation of land from Flying Cloud Dog Park – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of Flying Cloud Dog Park during construction.

D. Determination of Constructive Section 4(f) Use

Because the Flying Cloud Dog Park will be located away from the proposed light rail alignment, there will be no proximity impacts to the park as a result of the Southwest LRT Project. In particular, the park is not a sensitive noise receptor, the light rail alignment will mostly be shielded from view from the park due to existing and retained vegetation, and there will be no change in transit, vehicle, bicycle, or pedestrian access to the park.

In summary, there will be no proximity impacts on Flying Cloud Dog Park under the Project and thus the Southwest LRT Project will not substantially impair the qualifying activities, features, or attributes of the park. Therefore, FTA determined that there will be no Section 4(f) constructive use of Flying Cloud Dog Park under the Project, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA determined that there will be no permanent or temporary Section 4(f) use of Flying Cloud Dog Park under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of Flying Cloud Dog Park.

6.6.1.3 Unnamed Open Space B – *De Minimis* Impact Determination

A. Section 4(f) Property Description

Unnamed Open Space B (also known as Outlot A) is an approximately 49-acre open space located in Minnetonka, located generally south of Smetana Road, west of Green Circle Drive, north of Bren Road West, and east of Claremont Apartments (see Exhibit 6.6-5). Unnamed Open Space B is owned and operated by the City of Minnetonka. The open space is generally located between Bren Road West on the south, Smetana Road on the north, Green Circle Drive on the east, and private residential and commercial properties on the west. This parcel is designated as “Open Space” in the City of Minnetonka 2030 Comprehensive Plan (Figure IV-5) versus Open Space A, which is designated as “mixed use.” The City’s Plan notes that the purpose of “open spaces” is to preserve as many of the natural features of the land as possible.⁷

Unnamed Open Space B is predominantly naturally vegetated (e.g., wooded, riparian, and wetland features), with some areas of landscaping and pavement (i.e., roadway and trail segments that cross the property). The primary recreation features and attributes of Unnamed Open Space B are (1) the naturally vegetated areas of the property that make up the majority of the recreation area, and (2) segments of the Opus development area trail network, which is also a Section 4(f) property (see Section 6.6.1.4).

⁷ There is a covenant restricting the future use of this parcel to “parkland” or “open space” (see Deed Document No. 1260164). The covenant restriction will be addressed through the Council’s and MnDOT’s property acquisition process by implementing a real property condemnation process for the portion of Open Space B that will be permanently acquired for the Project. Open Space B also includes an easement for right-of-way across the northwest portion of the property, which includes an existing paved roadway by the Claremont Apartments to access Smetana Road. Other easements affecting the property include those for flowage rights of the City of Hopkins, drainage, and utilities.

EXHIBIT 6.6-4

Final Section 4(f) Evaluation – Flying Cloud Dog Park



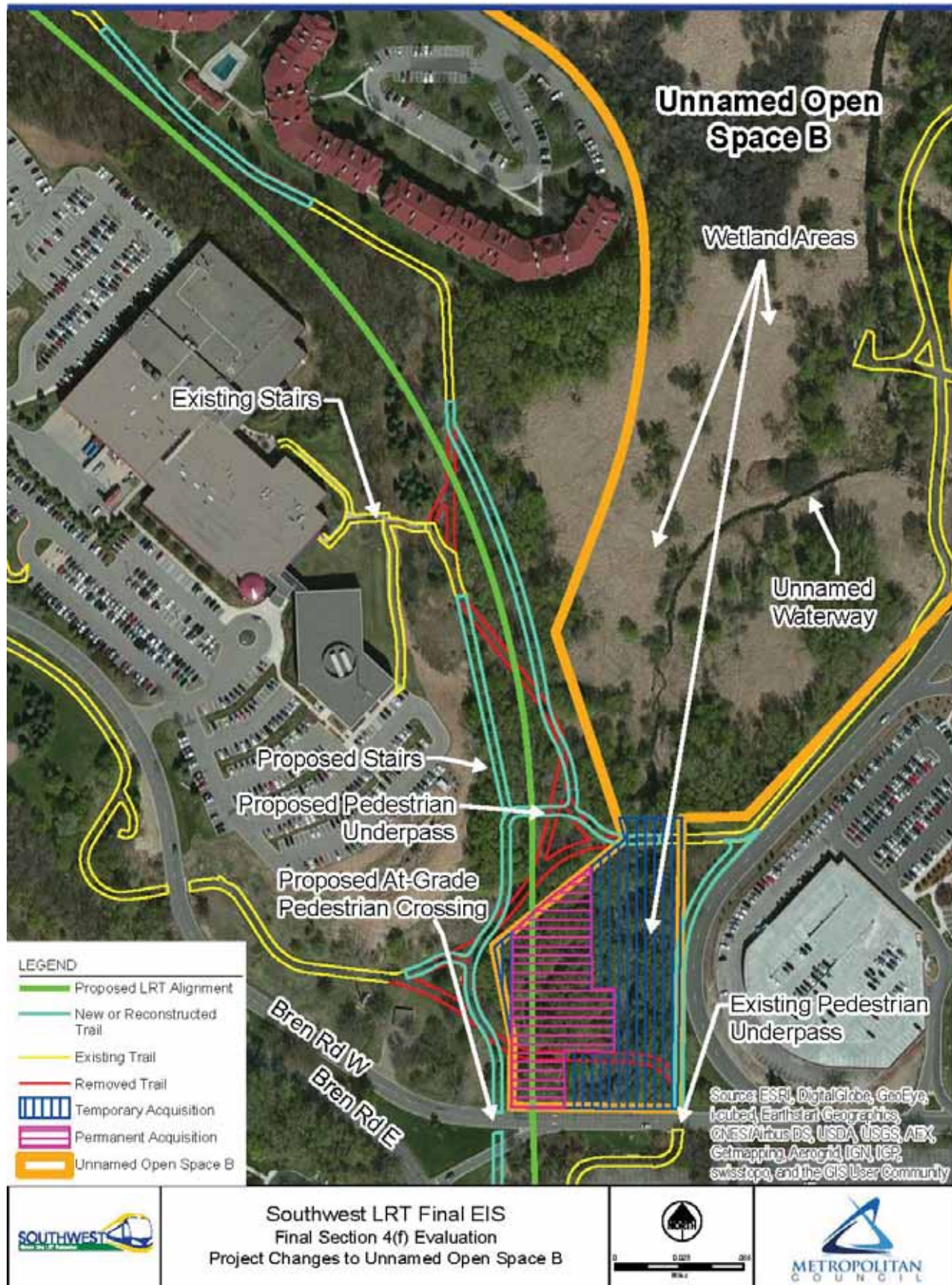
EXHIBIT 6.6-5A

Final Section 4(f) Evaluation – Unnamed Open Space B Boundary and Features



EXHIBIT 6.6-5B

Final Section 4(f) Evaluation – Project Changes to Unnamed Open Space B



The natural areas of Unnamed Open Space B are predominantly made up of the following: an established and functioning wetland in the northern portion of the property; a meandering minor waterway connecting to the wetland; and areas of natural woods, meadow and brush. These natural areas of the property attract an array of wildlife, which are also attracted to and move about and between other natural areas that are located on nearby private properties within the Opus development area. The recreational activities within Unnamed Open Space B that are related to those natural features include bird watching, wildlife viewing, native plant observation and identification, nature photography, picnicking, work breaks (from adjacent offices), solitude and contemplation, off-trail walking/hiking, and cross country skiing (weather permitting). Within Unnamed Open Space B there are a few park benches located adjacent to the trail segments that traverse the open space.

Additional recreation activities that occur within Open Space B are those that occur on the segments of the Opus development area trail network that pass through the property. Those recreation activities include walking, running, bicycling, nature and wildlife observation, cross country skiing, and other similar activities. The trail network is the primary way in which recreational users of Unnamed Open Space B access the property.

As Unnamed Open Space B is a publicly owned, publicly accessible recreation area of local significance, FTA considers Unnamed Open Space B to be a Section 4(f)-protected property. Consultation between City of Minnetonka and Project staff on design issues related to Open Space B has occurred throughout the design refinement process that occurred after publication of the Draft EIS. In addition, Project staff held a meeting with City staff on January 5, 2016,⁸ which focused on recreation areas owned and operated by the City of Minnetonka, the Section 4(f) process and documentation, and FTA's preliminary Section 4(f) determinations for the two City recreation areas addressed in this document.

B. Determination of Permanent Section 4(f) Use

As illustrated in Exhibit 6.6-5, the Project will result in a variety of permanent and short-term (construction-related) changes to Unnamed Open Space B, described as follows.

The Council will permanently acquire from the City of Minnetonka an approximately 1.0-acre portion of Unnamed Open Space B (approximately 2 percent, as illustrated on Exhibit 6.6-5). The acquired property will be incorporated into the Project for transportation purposes. In particular, the acquired portion of Unnamed Open Space B will be used by the Project for the following:

- A short section of the proposed light rail alignment, including a double crossover and grading required to accommodate the light rail alignment;
- A traction power substation and a double-crossover bungalow; and
- An access driveway between the substation/bungalow and Bren Road West.

Most of the natural areas of Unnamed Open Space B, which are predominantly located in the northern portion of the property, will not be directly affected by the Project. Those areas, such as the wetland, will not be altered by the Project, either permanently or temporarily. In addition, the proposed light rail alignment will generally be screened from view from those natural areas due to retained trees and existing residential buildings located between the proposed alignment and those natural areas.

The portion of the property that will be acquired by the Project includes some natural vegetation; however, that area is generally isolated from the larger natural areas located in the northern portion of the property. Further, the area that will be acquired by the Project has somewhat different attributes than the northern natural areas, in that it is directly bordered on three sides—by large commercial development immediately to the east and west and by an arterial roadway (Bren Road West) to the south. Additionally, some of the area to be acquired for the Project is currently landscaped, rather than naturally vegetated. Finally, over half the southern portion of the property will not be acquired for the Project and will be retained in City

⁸ See Section 6.7 for a more detailed description of the FTA's and the Council's Section 4(f) consultation process and activities.

ownership; this remaining area of the southern portion of Unnamed Open Space B will provide a vegetative buffer between a new trail segment on the southwest edge of the property and commercial development located to the west.

Project construction activities will be confined to the southern portion of Unnamed Open Space B. Those construction activities will predominantly occur within the area of Unnamed Open Space B that will be permanently acquired for the Project. Those construction activities will include clearing, grubbing, and grading, construction of the light rail alignment, new trail sections, the new traction power substation and signal bungalow, and revegetation of the site.

Some construction activities will also occur within the approximately 1.6 acres of Unnamed Open Space B located outside and immediately to the east of the area of the property to be permanently acquired for the Project. In general, those construction activities will be related to regrading that will be required to match the grading within the area to be permanently acquired, as well as the removal and replacement of trail segments. Those construction activities may also include the construction and removal of potential temporary trail connections.

Construction activities within Unnamed Open Space B will be closely coordinated with the City of Minnetonka to help avoid and minimize effects on recreational activities within the open space. The Council will also provide the City of Minnetonka and the public with ongoing notification of construction activities within the open space, such as the timing and location of heavy construction activities and trail detours. All areas of the remaining Unnamed Open Space B property that will be affected by Project construction activities will be restored to existing conditions or better and restoration plans will be developed and implemented in consultation with the City of Minnetonka.

Relative to the segments of the Opus development area trail network that traverse portions of Unnamed Open Space B, portions of the existing at-grade trail will be relocated to accommodate construction of the light rail alignment and other facilities. New sections of trail will be located within the remaining adjacent portion of Unnamed Open Space B, as illustrated on Exhibit 6.6-5. The realignment of the trails within the open space will ultimately be determined through continued consultation between FTA, the Council, and the City of Minnetonka, which will work to avoid, minimize, and mitigate impacts to the open space's Section 4(f)-qualifying activities, features, and attributes. As noted in Section 6.6.1.4, existing trail connections for portions of the Opus development area trail network that are within Unnamed Open Space B will be maintained in the long-term under the Project. Except for the potential for short-term trail closures to ensure trail user safety, all existing trail connections will be maintained during construction of the new trail alignment. During those short-term temporary trail closures, trail users will be provided with detour routes and information. Temporary trails may be constructed to allow for the removal of existing trail segments and construction of new trail segments.

FTA, the City of Minnetonka, and the Council have made efforts to help avoid, minimize, and mitigate impacts to Unnamed Open Space B, including participation in a Section 4(f) coordination meeting in January 2016. See Appendix I for the notes and materials from that meeting. In particular, the Project minimized the amount of area of the property needed to be acquired for transportation purposes and designed the modified trail network to ensure continued connections and minimal trail modifications. Further, the recreation activities that currently occur within the area unaffected by the Project in Unnamed Open Space B will be maintained both during and after construction of the Project. The Council also considered design modifications that would have located the traction power substation, double-crossover bungalow, and related access road outside of Unnamed Open Space B. Three alternate locations were identified in consultation with the City of Minnetonka, one west and two south of the proposed site within Unnamed Open Space B (immediately northwest of the proposed at-grade pedestrian crossing of Bren Road West and immediately across Bren Road West, respectively). In summary, depending on the particular site, the alternate sites were dismissed from further consideration because of a combination of the following: (1) conflicts with sanitary sewer, water and/or stormwater mains; (2) private property acquisitions; (3) conflicts with existing trails; (4) conflicts with sight lines between roadways and the proposed station area; and (5) conflicts with existing and planned parking facilities.

C. Section 4(f) Use Determination

Based on the design and analysis as described in this section, and consistent with the requirements of 23 CFR Part 774.5(b), FTA has determined, in coordination with the City of Minnetonka, that Project actions will not adversely affect the features, attributes, or activities that qualify Unnamed Open Space B for Section 4(f) protection. As such, FTA has concluded that Project actions will result in a Section 4(f) *de minimis* impact at Unnamed Open Space B, consistent with 23 CFR Part 774.17.

FTA, the Council, and the City of Minnetonka considered comments received during the public comment period for the Amended Draft Section 4(f) Evaluation that address the preliminary Section 4(f) *de minimis* impact determination for Unnamed Open Space B. Following the close of the public comment period on the Amended Draft Section 4(f) Evaluation and after consideration of the comments, FTA requested and received written concurrence from the City of Minnetonka prior to making this final *de minimis* use determination for this property (see Appendix I).

6.6.1.4 Opus Development Area Trail Network – *De Minimis* Impact Determination

A. Section 4(f) Property Description

The Opus development⁹ trail network is an approximately eight-mile (approximately 42,000 feet) length of trail corridor that generally serves the mixed-use Opus development area in Minnetonka, Minnesota (see Exhibit 6.6-6). In general, the Opus development trail network is owned and maintained by the City of Minnetonka. Portions of the trail network are on land owned fee simple by the City of Minnetonka (e.g., within Unnamed Open Space B); portions of the trail network are on land owned fee simple by a private entity or individual within an easement owned by the City of Minnetonka (e.g., south of the Claremont Apartments); and portions of the trail network are located on land owned fee simple by a private entity or individual.

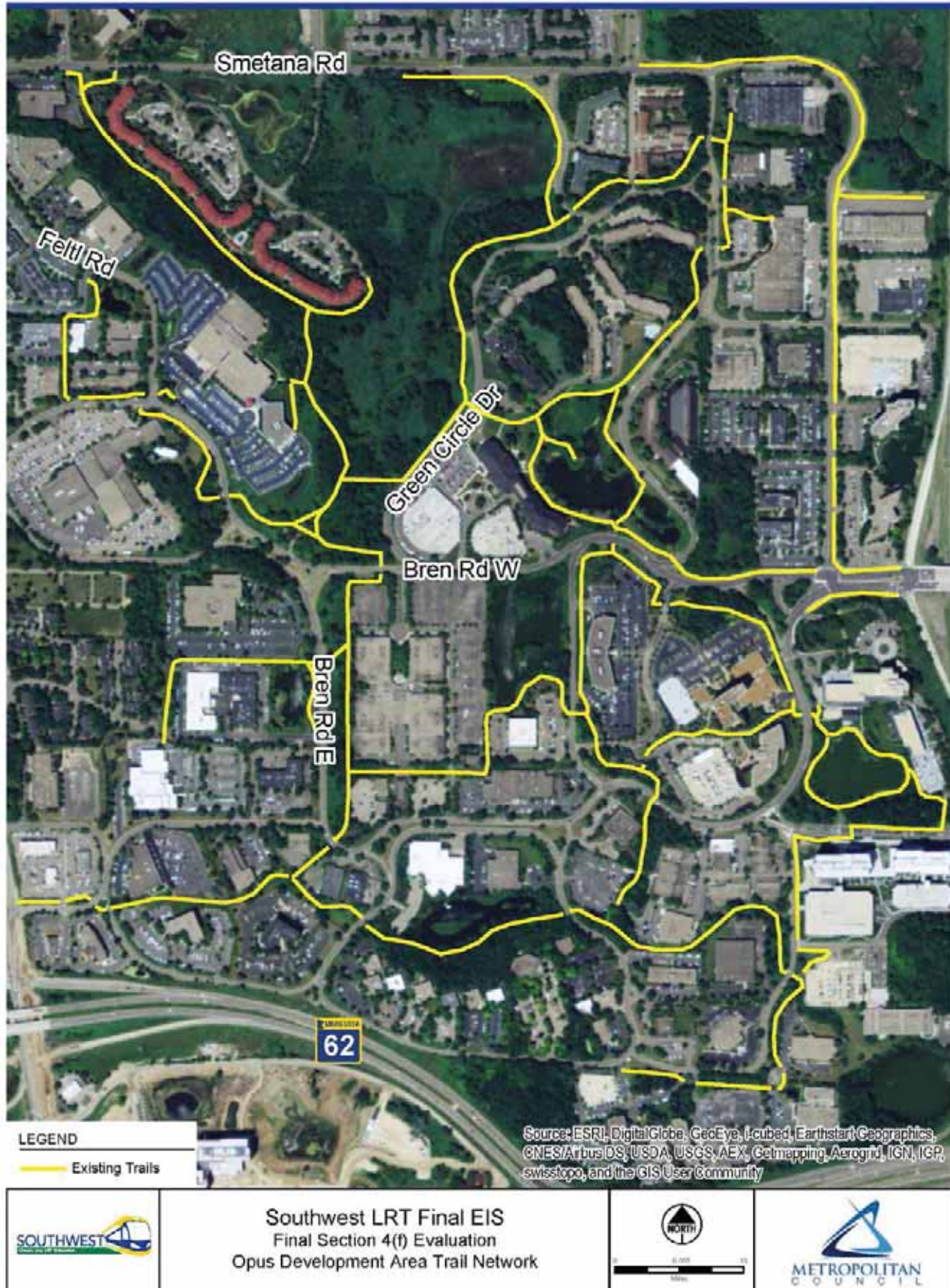
The Opus development area trail network is generally located between Smetana Road to the north, Highway 169 to the east, Highway 62 to the south, and Shady Oak Road to the west. The Opus development trail network was originally designed and constructed as an element of the Opus mixed use development, which includes office, retail, residential, institutional, recreation, and other uses. Overall, trails within the City of Minnetonka, including the Opus development area trail network, are designated as both a recreation and a transportation facility in the City Minnetonka 2030 Comprehensive Plan (Chapter VII – Parks, Open Space and Trail Plan; Figure VII-2 – Existing Trail System within the Comprehensive Plan; Chapter 8 – Transportation Plan).

The Opus development area trail network is a collection of trails that are generally paved with asphalt, with short sections of concrete pavement. Most of the trail network is at-grade, with some short sections of trails crossing under local roads. Maintaining and improving the road/trail grade separations are a priority of the City of Minnetonka. The primary recreation facilities within the Opus development area trail network are the trails themselves. There are scattered benches, picnic tables, directional signs, and the like that are located adjacent to the trail network and are utilized by trail users. Segments of the Opus development area trail network cross through and are included within Unnamed Open Space B, which is a Section 4(f) property (see Section 6.6.1.3 for additional information on Unnamed Open Space B). The primary recreation activities that occur within the Opus development area trail network occur on the trails themselves. Those recreation activities include walking, running, bicycling, nature and wildlife observation, cross-country skiing (conditions allowing), and other similar activities. There are also ancillary passive and active recreation activities occurring on other public and private recreation areas or open spaces that connect to the trail network, for example, where trail users stop to observe or use a recreation area or open space. Transportation activities also occur within the trail network, providing pedestrians and bicyclists with connections between residential, commercial retail, and other uses within and outside of the Opus development area. Much of the trail network is plowed of snow during the winter.

⁹ Which is formally known as Opus 2 Business Park.

EXHIBIT 6.6-6

Final Section 4(f) Evaluation – Opus Development Area Trail Network



As the Opus development area trail network is a publicly owned, publicly accessible recreation area of local significance, FTA considers the Opus development area trail network to be a Section 4(f)-protected property. Consultation between the City of Minnetonka and Project staff on design issues related to the Opus development area trail network has occurred throughout the design refinement process that occurred after publication of the Draft EIS. In addition, Project staff held a meeting with City staff on January 5, 2016,¹⁰ which focused on recreation areas owned and operated by the City of Minnetonka, the Section 4(f) process and documentation, and FTA's preliminary Section 4(f) determinations for the recreation areas.

B. Determination of Permanent Section 4(f) Use

As illustrated on Exhibits 6.6-7 and 6.6-8, the Project will result in a variety of permanent and short-term (construction-related) changes to the Opus development area trail network, described as follows.

The Council will permanently alter relatively short sections of the Opus development area trail network to accommodate the introduction of the light rail alignment, station, and related improvements (as illustrated on Exhibits 6.6-7 and 6.6-8). In general, alterations to the trail network by the Project will include removal of relatively short sections of paved trail to be replaced with new paved trail sections in different locations, resulting in a net increase in the size of the trail network. In summary, approximately 1.5 acres of existing trail will be removed and replaced with approximately 1.8 acres of new trail, resulting in a net increase of approximately 0.3 acres of trail. The Project will also maintain the number of trail undercrossings beneath roadways and will include a new trail undercrossing beneath the proposed light rail alignment. All alterations to the trail network will result in maintaining all connections currently provided through the Opus development area trail network. Each new trail segment will be designed and constructed to have the same or better physical and functional characteristics of the trail segment that it will replace. For example, new trail segments will be paved with asphalt where the current trail segment is paved with asphalt and a trail segment that is currently 10 feet wide will be replaced with a trail segment that is at least 10 feet wide. Specifications for the new replacement trail segments have and will be developed in consultation with the City of Minnetonka.

Some temporary construction activities associated with the Project will affect the Opus development area trail network within and directly adjacent to the segments of trail that will be removed and replaced with a new trail segment. Construction activities within the Opus development area trail network include grading, vegetation removal and replacement, repaving segments of the trail that will remain in place to match new trail segments, temporary trail connections and signage, and other activities associated with reconstruction of affected trails. The Project will provide the public and the City of Minnetonka with construction detour information. Further, the Project will restore all segments of the Opus development area trail network altered but not permanently moved by the Project (e.g., regrading a trail segment to match a new trail segment) to pre-construction conditions or better, based on specifications agreed to between the Council and the City of Minnetonka.

All existing trail connections provided by the Opus development area trail network will be maintained in the long-term under the Project. Except for the potential for short-term trail closures to ensure trail user safety during construction, all existing trail connections will be maintained during construction of the new trail. During those temporary trail closures, trail users will be provided with detour routes, signage, and other information as appropriate. Temporary trails may be constructed to allow for the removal of existing trail segments and construction of new trail segments. Construction activities within the Opus development area trail network will be closely coordinated with the City of Minnetonka to help avoid and minimize effects on recreational activities within the trail network. The Council will also provide the City of Minnetonka and the public with ongoing notification of construction activities within the trail network, such as the timing and location of trail detours.

¹⁰ See Section 6.7 for a more detailed description of the FTA's and the Council's Section 4(f) consultation process and activities.

EXHIBIT 6.6-7

Final Section 4(f) Evaluation – Project Changes to the Opus Development Area Trail Network (north of Bren Rd W)

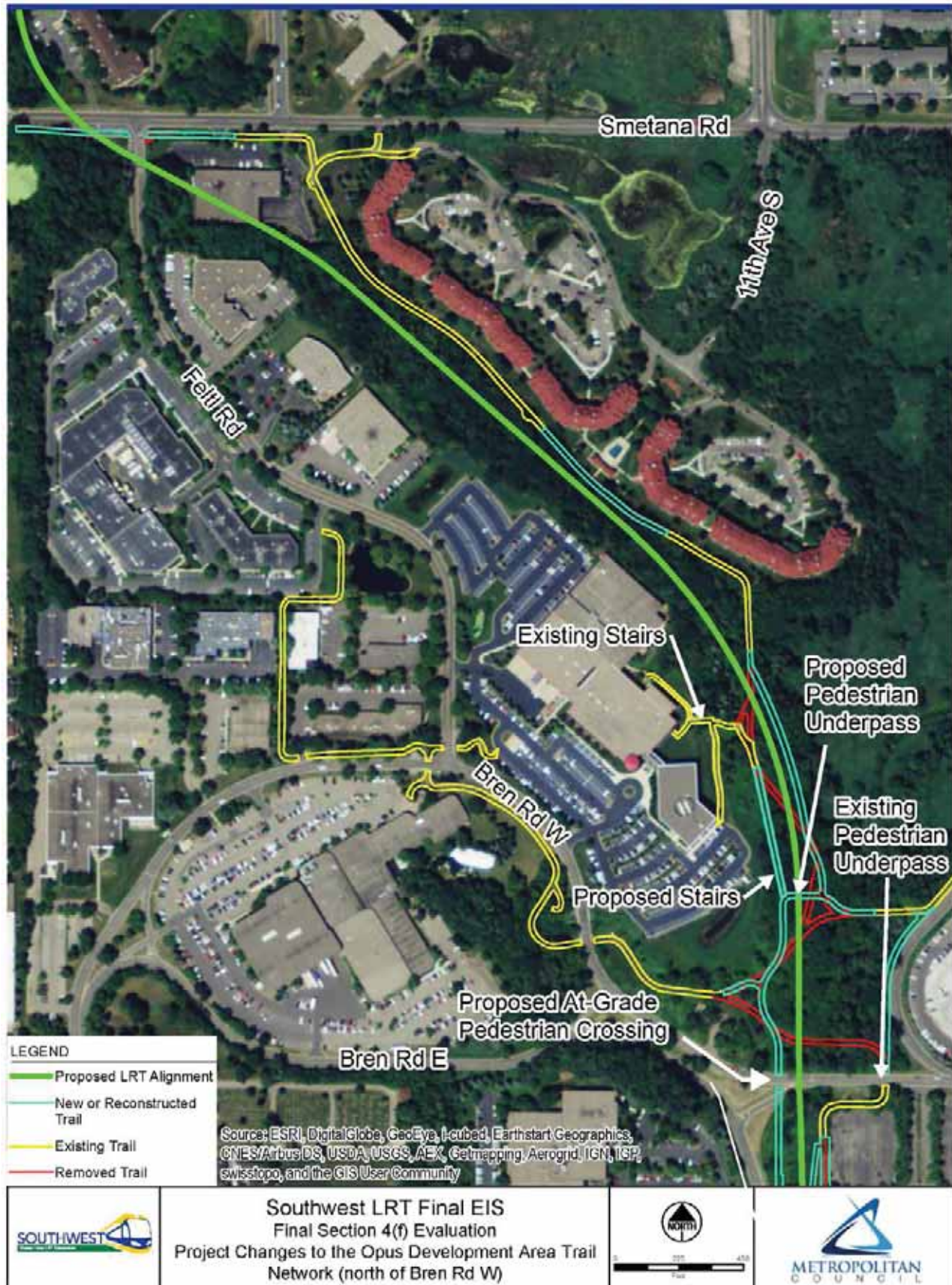
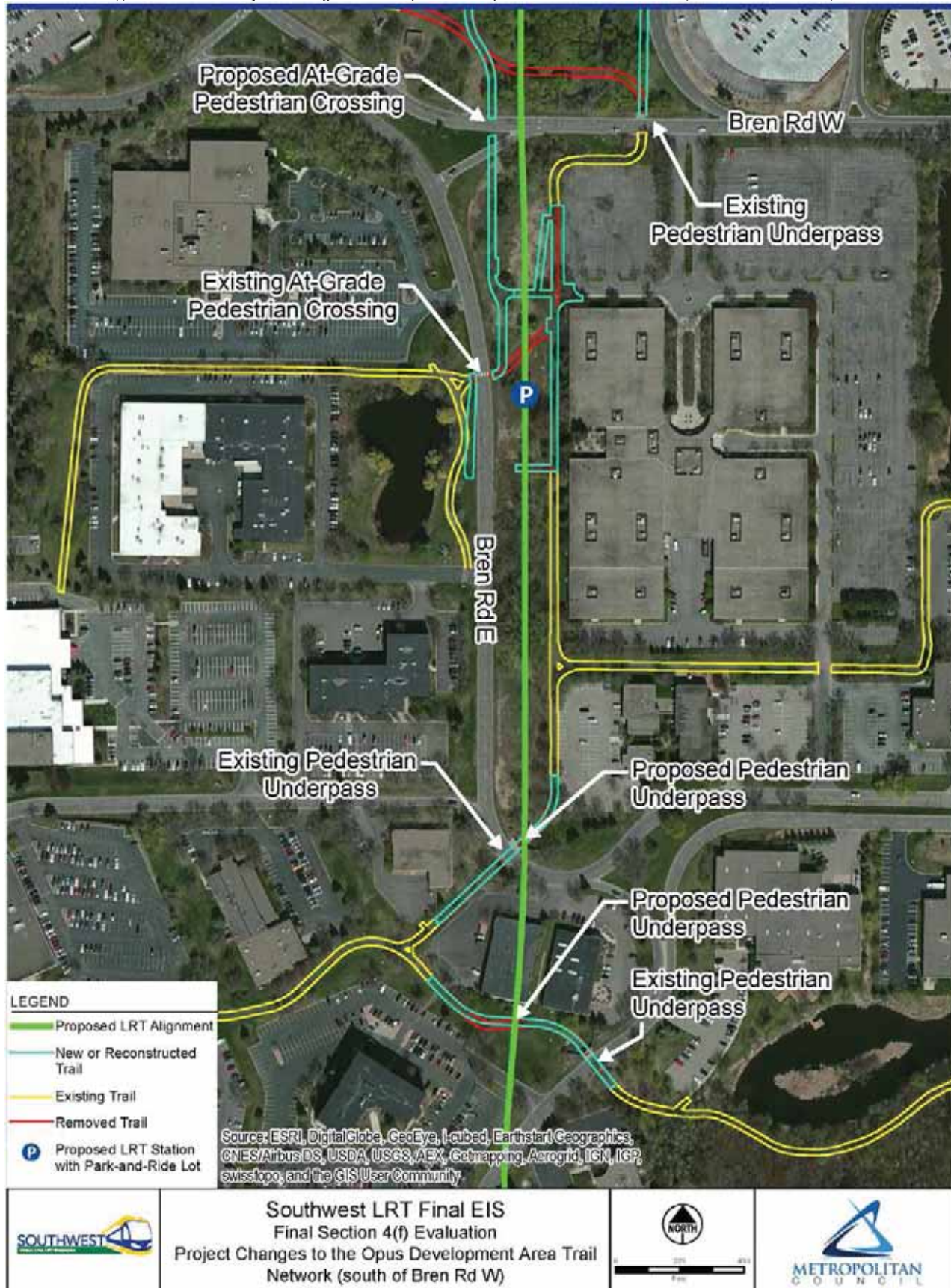


EXHIBIT 6.6-8

Final Section 4(f) Evaluation – Project Changes to the Opus Development Area Trail Network (south of Bren Rd W)



FTA, the City of Minnetonka, and the Council have made efforts to help avoid, minimize, and mitigate impacts to the Opus development area trail network, including participation in a Section 4(f) coordination meeting on January 5, 2016 (see Appendix I for copies of the notes and materials for that meeting). For the areas of the Opus development area trail network that will be permanently and temporarily affected by the Project, FTA, the City of Minnetonka, and the Council have coordinated to define ways to help avoid, minimize, and mitigate impacts to the open space. In particular, the Project minimized the amount of area of the trail network to be modified. Further, Project designs have and will ensure that all existing trail connections will be maintained during and after construction of the Project. In addition, the modifications to the trail network have avoided the removal of any existing trail undercrossings of roadways of trails within the network. Further, a new trail undercrossing of the proposed light rail alignment will be provided just north of Bren Road West. Finally, the design of the Project has and will continue to ensure that recreation activities that currently occur within the Opus development area trail network will be maintained both during and after construction of the Project.

C. Section 4(f) Use Determination

Based on the design and analysis as described in this section, and consistent with the requirements of 23 CFR Part 774.5(b), FTA has determined, in coordination with the City of Minnetonka, that Project actions will not adversely affect the features, attributes, or activities that qualify the Opus development area trail network for Section 4(f) protection. As such, FTA has concluded that Project actions will result in a Section 4(f) *de minimis* impact of the Opus development area trail network, consistent with 23 CFR Part 774.17.

FTA, the Council, and the City of Minnetonka considered comments received during the public comment period for the Amended Draft Section 4(f) Evaluation that addressed the preliminary Section 4(f) *de minimis* impact determination for the Opus development area trail network. Following the close of the public comment period on this Amended Draft Section 4(f) Evaluation and after consideration of the comments, FTA requested and received written concurrence from the City of Minnetonka prior to making this final *de minimis* impact determination for this property (see Appendix I).

6.6.1.5 Overpass Skate Park – No Section 4(f) Use Determination

A. Section 4(f) Property Description

The Overpass Skate Park is located at 100 Washington Avenue South in Hopkins, Minnesota. The approximately 0.4-acre park is under the Highway 169 bypass. The park has a variety of features for skateboard, inline skaters and BMX bikers, including piano banks, fun boxes, kinked rails, and staircases. Protective helmets and pads are also available. The park is seasonal and operates as weather permits – generally extending from May through October). Hours of operation are noon to dusk, weekends during spring and fall and seven days a week during the summer. There is a fee for park use, which is currently \$8.00 per day for non-residents, with a \$2.00 discount for residents. First-time users are required to sign a waiver, with parent signature required for those under the age of 18. The park is owned by the City of Hopkins and it is operated by 3rd Lair under a management agreement with the city. As the park is a publicly owned, publicly accessible park of local significance, Overpass Skate Park is considered by FTA to be a Section 4(f) protected property.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans and Exhibit 6.6-9, the Project will not result in a permanent incorporation of land from Overpass Skate Park – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

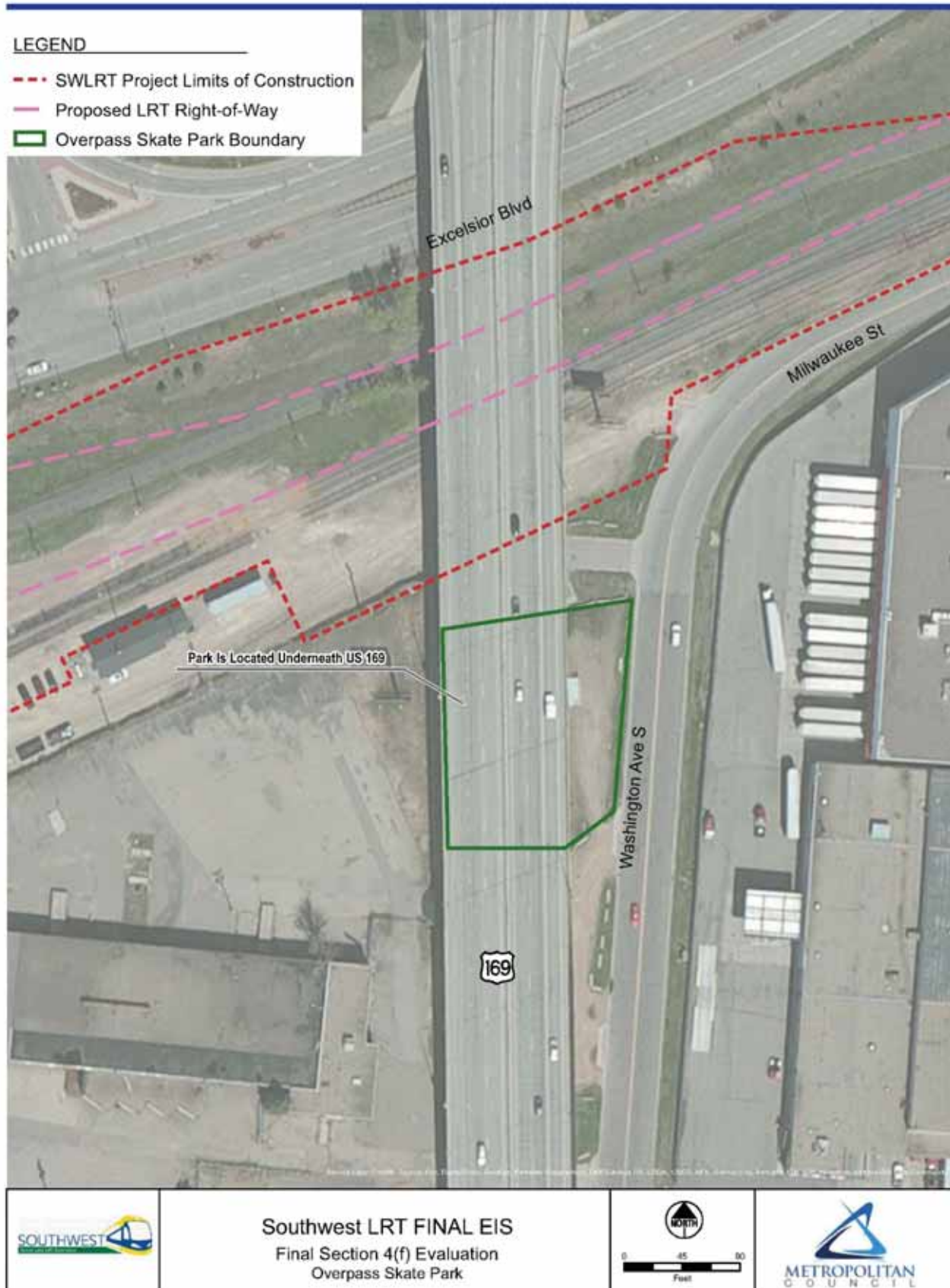
As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of Overpass Skate Park during construction.

D. Determination of Constructive Section 4(f) Use

The Overpass Skate Park is not considered a sensitive noise receptor as it is an active recreation area and it is not part of a sensitive visual landscape unit. Therefore, the park will not be adversely affected by elevated

EXHIBIT 6.6-9

Final Section 4(f) Evaluation – Overpass Skate Park



noise levels from the operation of light rail trains or the presence of new light rail facilities, such as tracks and overhead wires. Changes in development density in areas surrounding proposed light rail stations could result in an increase in Overpass Skate Park usage, which could have potential for both positive and negative consequences. The park will see an improvement in transit access, with the addition of the proposed Downtown Hopkins Station approximately one-third mile to the west. Vehicular, bicycle, and pedestrian access to the park will not change.

In summary, there will be no proximity impacts of the Project on Overpass Skate Park and thus the Southwest LRT Project will not substantially impair the qualifying activities, features, or attributes of the park. Therefore, FTA determined that there will be no Section 4(f) constructive use of Overpass Skateboard Park under the Project, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA determined that there will be no permanent or temporary Section 4(f) use of Overpass Skate Park under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of Overpass Skate Park.

6.6.1.6 Edgebrook Park – No Section 4(f) Use Determination

A. Section 4(f) Property Description

Edgebrook Park is located at 3920 Pennsylvania Avenue South in St. Louis Park, Minnesota, immediately north of and paralleling the Cedar Lake Trail, generally between Brookview Drive and Taft Avenue South. The approximately 1.3-acre park includes a play structure, basketball courts, and access to Cedar Lake Trail. During the winter, the park houses a figure lighted skating rink. The park is owned and managed by the City of St. Louis Park. As the park is a publicly owned, publicly accessible park of local significance, Edgebrook Park is considered by FTA to be a Section 4(f) protected property.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans and Exhibit 6.6-10, the Project will not result in a permanent incorporation of land from Edgebrook Park – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of Edgebrook Park during construction.

D. Determination of Constructive Section 4(f) Use

While light rail trains will be audible from within the park, Edgebrook Park is not considered a sensitive noise receptor under FTA noise guidelines, as it is an active recreation area. Therefore, under FTA noise criteria there will be no noise impact to the park under the Project. While light rail trains and light rail improvements (e.g., tracks, overhead wires) will be visible from within the park under the Project, this change in the visual setting of the park will not adversely affect the activities, features, or attributes of the park. Changes in development density in areas surrounding proposed light rail stations could result in an increase in Edgebrook Park usage, which could have potential for both positive and negative consequences. The park will see an improvement in transit access, with the addition of the proposed Louisiana Station approximately one-third mile to the east. Vehicular, bicycle, and pedestrian access to the park will not change.

In summary, there will be no proximity impacts of the Project on Edgebrook Park and thus the Southwest LRT Project will not substantially impair the qualifying activities, features, or attributes of the park. Therefore, FTA has determined that there will be no Section 4(f) constructive use of Edgebrook Park under the Project, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of Edgebrook Park under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of Edgebrook Park.

6.6.1.7 Isaak Walton League Creekside Park – No Section 4(f) Use Determination**A. Section 4(f) Property Description**

Isaak Walton League Creekside Park is located at 7341 Oxford Street in St. Louis Park, Minnesota, immediately north of Minnehaha Creek. The approximately 1.8-acre park includes a canoe landing, an off-street parking lot, trail access, and outdoor cooking grills. The park is owned and managed by the City of St. Louis Park. As the park is a publicly owned, publicly accessible park of local significance, Isaak Walton League Creekside Park is considered by FTA to be a Section 4(f) protected property.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans and Exhibit 6.6-11, the Project will not result in a permanent incorporation of land from Isaak Walton League Creekside Park – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of Isaak Walton League Creekside Park during construction.

D. Determination of Constructive Section 4(f) Use

Due to existing buildings and vegetation between the park and the proposed light rail alignment, the Southwest LRT Project will not change the visual setting of the park. Although some sound from light rail trains will be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria, which are discussed in Section 3.12 of this Final EIS. Therefore, under FTA noise criteria there will be no noise impact to the park under the Project. Changes in development density in areas surrounding proposed light rail stations could result in an increase in Isaak Walton League Creekside Park usage, which could have potential for both positive and negative consequences. The park will see an improvement in transit access, with the addition of the proposed Louisiana Station approximately one-quarter mile to the east. Vehicular, bicycle, and pedestrian access to the park will not change.

In summary, there will be no proximity impacts of the Project on Isaak Walton League Creekside Park and thus the Southwest LRT Project will not substantially impair the qualifying activities, features, or attributes of the park. Therefore, FTA has determined that there will be no Section 4(f) constructive use of Isaak Walton League Creekside Park under the Project, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of Isaak Walton League Creekside Park under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of Isaak Walton League Creekside Park.

6.6.1.8 Jorvig Park – No Section 4(f) Use Determination**A. Section 4(f) Property Description**

Jorvig Park is located at 6100 West 37th Street in St. Louis Park, northwest of the intersection of Brunswick Avenue South and West 37th Street and immediately south of the Bass Lake Spur. The approximately 0.6 acre park includes a play structure, horseshoe pits, picnic tables, and outdoor cooking grills. The park also houses a relocated historic train depot (i.e., the Chicago, Milwaukee, St. Paul and Pacific Railroad Depot – see resource HE-SLC-008 in Section 3.5 for more information). The park is owned and maintained by the City of St. Louis Park. As the park is a publicly owned, publicly accessible park of local significance, Jorvig Park is considered by FTA to be a Section 4(f) protected property.

EXHIBIT 6.6-10

Final Section 4(f) Evaluation – Edgebrook Park



EXHIBIT 6.6-11

Final Section 4(f) Evaluation – Isaak Walton League Creekside Park



B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans and Exhibit 6.6-12, the Project will not result in a permanent incorporation of land from Jorvig Park – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of Jorvig Park during construction.

D. Determination of Section 4(f) Constructive Use

Existing bicycle, pedestrian, and vehicular access to Jorvig Park will be maintained under the proposed Project. The proposed Wooddale Station is within walking distance of Jorvig Park, thereby providing improved transit access to the park. Although the sound of light rail trains will be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria, which are discussed in Section 3.12 of this Final EIS. Changes in development density in areas surrounding the proposed light rail station could result in an increase in Jorvig Park usage, which could have potential for both positive and negative consequences. The Project will result in changes in the park's setting and a visitor's visual experience through the introduction of the light rail alignment immediately north of the park. The visual changes and impacts will not alter or impair the overall use or function of the park.

In summary, the proximity impacts of the Project on Jorvig Park will not substantially impair the qualifying activities, features, or attributes of the park and, therefore, FTA has determined that there will be no Section 4(f) constructive use of Jorvig Park under the Project, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of Jorvig Park under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of Jorvig Park.

6.6.1.9 Lilac Park – No Section 4(f) Use Determination**A. Section 4(f) Property Description**

Lilac Park (originally Roadside Park) is located immediately north of the Bass Lake Spur, east of Highway 100. The approximately 2.7-acre park is accessed by a service road that connects to Beltline Boulevard and by a connecting bicycle path. The park includes a relocated and restored "Beehive" stone structure that houses three non-functional fireplaces, limestone picnic tables, "council ring" and fire pit, bicycle racks, trash receptacles, and an information kiosk. The park was restored by the City of St. Louis Park and others in 2009. As the park is a publicly owned, publicly accessible park of local significance, Lilac Park is considered by FTA to be a Section 4(f) protected property.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans and Exhibit 6.6-13, the Project will not result in a permanent incorporation of land from Lilac Park – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of Lilac Park during construction.

D. Determination of Constructive Section 4(f) Use

Existing bicycle, pedestrian, and vehicular access to the park will be maintained under the proposed Project. Although the sound of light rail trains will be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria, which are discussed in Section 3.12 of this Final EIS. Changes in development density in areas surrounding the proposed light rail station could result in an increase in Lilac Park usage, which could have potential for both positive and negative consequences. The

EXHIBIT 6.6-12

Final Section 4(f) Evaluation – Jorvig Park

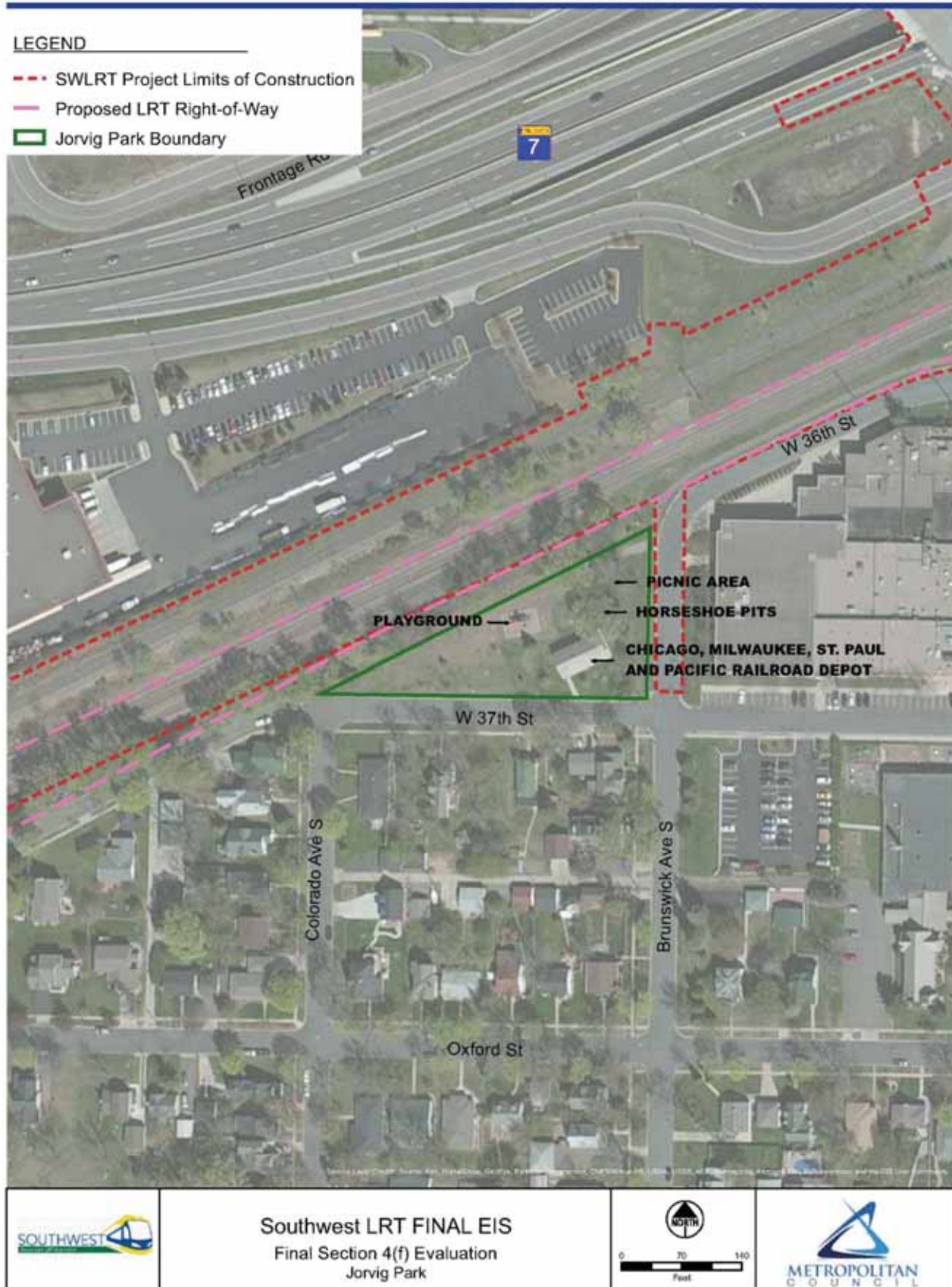


EXHIBIT 6.6-13

Final Section 4(f) Evaluation – Lilac Park



Project will result in changes in the park's setting and a visitor's visual experience through the introduction of the light rail alignment immediately south of the park. The visual changes and impacts will not alter or impair the overall use or function of the park.

In summary, the proximity impacts of the Project on Lilac Park will not substantially impair the qualifying activities, features, or attributes of the park and, therefore, FTA has determined that there will be no Section 4(f) constructive use of Lilac Park under the Project, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of Lilac Park under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of Lilac Park.

6.6.1.10 Alcott Triangle – No Section 4(f) Use Determination

A. Section 4(f) Property Description

Located at the junction of St. Louis Avenue and West 29th Street in Minneapolis, Alcott Triangle is an approximately 0.3 acre park owned and managed by the MPRB. The park has limited facilities, including trees, a bench, picnic table, and waste can. The park is primarily used for picnicking, walking, and open space. As the park is a publicly owned, publicly accessible park of local significance, Alcott Triangle is considered by FTA to be a Section 4(f) protected property. See the MPRB information request letter in Appendix I for further information about Alcott Triangle. Consultation between MPRB, City of Minneapolis, and project staff on design issues related to the park has occurred throughout the design refinement process that occurred after publication of the Draft EIS. In addition, project staff held meetings with MPRB staff focused on parks owned and operated by the MPRB, the Section 4(f) process and documentation, and FTA's determination for the park on February 13 and March 6, 2015.¹¹

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans and Exhibit 6.6-14, the Project will not result in a permanent incorporation of land from Alcott Triangle – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of Alcott Triangle during construction.

D. Determination of Constructive Section 4(f) Use

Existing bicycle, pedestrian, and vehicular access to the park will be maintained under the proposed Project. Although the sound of light rail trains will be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria, which are discussed in Section 3.12 of this Final EIS. Changes in development density in areas surrounding the proposed light rail station could result in an increase in Alcott Triangle usage, which could have potential for both positive and negative consequences. The Project will result in changes in the park's setting and a visitor's visual experience through the introduction of the light rail alignment immediately south of the park. The visual changes and impacts will not alter or impair the overall use or function of the park.

In summary, the proximity impacts of the Project on Alcott Triangle will not substantially impair the qualifying activities, features, or attributes of the park and, therefore, FTA has determined that there will be no Section 4(f) constructive use of Alcott Triangle under the Project, consistent with 23 CFR Part 774.15(a).

¹¹ See Section 6.7 for a project-wide description of the FTA's and the Council's Section 4(f) consultation process and activities.

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of Alcott Triangle under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of Alcott Triangle.

6.6.1.11 Park Siding Park – No Section 4(f) Use Determination**A. Section 4(f) Property Description**

Park Siding Park is located between the Kenilworth Corridor, Dean Court, and West 28th Street. Under the Project, the proposed light rail alignment will be located west of the park. Park Siding Park is owned and managed by the MPRB. Facilities within the 1.4-acre park include two play areas with various in-place playground equipment, a picnic area, benches, bicycle parking, ornamental lighting and fencing, and a pergola seating area. Recreational activities within the park include picnicking, a stopover point for users of nearby multiple use paths, and child's play area. As the park is a publicly owned, publicly accessible park of local significance, Park Siding Park is considered by FTA to be a Section 4(f)-protected property. See the MPRB information request letter in Appendix I for further information about Park Siding Park. Consultation between MPRB, City of Minneapolis, and project staff on design issues related to the park has occurred throughout the design refinement process that occurred after publication of the Draft EIS. In addition, project staff held meetings with MPRB staff focused on parks owned and operated by the MPRB, the Section 4(f) process and documentation, and FTA's determination for the park on February 13 and March 6, 2015.¹²

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans and Exhibit 6.6-15, the Project will not result in a permanent incorporation of land from Park Siding Park – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

The Southwest LRT Project's Draft Section 4(f) Evaluation includes the finding that LRT 3A-1 will require construction activities that will have resulted in the temporary occupancy of approximately 0.016 acre of the park by the project to construct and remove a temporary detour trail associated with construction of the proposed light rail alignment. Through additional design refinement, the Council has determined that the Southwest LRT Project will be constructed without requiring a temporary trail detour into Park Siding Park, thus avoiding the approximately 0.016 acre temporary occupancy anticipated in the Draft Section 4(f) Evaluation. As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of Lilac Park during construction.

D. Determination of Constructive Section 4(f) Use

Existing bicycle, pedestrian, and vehicular access to the park will be maintained under the proposed Project. Because the light rail alignment will be in a tunnel in the vicinity of Park Siding Park, the sound of light rail trains will not be noticeable from within the park and the park is not considered a sensitive noise receptor based on FTA's criteria, which are discussed in Section 3.12 of this Final EIS. Changes in development density in areas surrounding the proposed light rail station could result in an increase in Park Siding Park usage, which could have potential for both positive and negative consequences. The Project will result in changes in the park's setting and a visitor's visual experience through the construction of the light rail tunnel and reconstruction of the existing freight rail tracks and bicycle and pedestrian path in HCRRA right-of-way just south of the park. The primary visual change will be the removal and replacement of existing vegetation in the HCRRA right-of-way. A landscaping plan for the area is currently under development, which includes the participation of the MPRB staff. The visual changes and impacts resulting from the Project will not alter or impair the overall use or function of the park.

¹² See Section 6.7 for a project-wide description of the FTA's and the Council's Section 4(f) consultation process and activities.

EXHIBIT 6.6-14

Final Section 4(f) Evaluation – Alcott Triangle



EXHIBIT 6.6-15

Final Section 4(f) Evaluation – Park Siding Park



In summary, the proximity impacts of the Project on Park Siding Park will not substantially impair the qualifying activities, features, or attributes of the park and, therefore, FTA has determined that there will be no Section 4(f) constructive use of Park Siding Park under the Project, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of Park Siding Park under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Park Siding Park.

6.6.1.12 Kenilworth Channel/Lagoon (as an Element of the Minneapolis Chain of Lakes Regional Park) – De Minimis Determination

A. Property Description

The Kenilworth Channel/Lagoon¹³ is an element of the Minneapolis Chain of Lakes Regional Park.¹⁴ The Kenilworth Channel/Lagoon connects Cedar Lake and Lake of the Isles, which are also part both of the Minneapolis Chain of Lakes Regional Park. The approximately 10.3-acre waterway and banks were constructed by the MPRB in the early 1900s, replacing a meandering creek. Construction of the waterway allowed the elevations of Cedar Lake and Lake of the Isles to equalize and for watercraft to freely move between the two lakes (and ultimately throughout the lakes that are encompassed by the Minneapolis Chain of Lakes Regional Park).

While most of the land making up the Kenilworth Channel/Lagoon is owned fee simple by the MPRB, two areas approximately mid-point in the channel/lagoon (within the Kenilworth Corridor and where the corridor crosses the channel/lagoon) are owned fee simple by BNSF and HCRRA. Within those two areas (i.e., the portions of the channel/lagoon owned fee simple by BNSF and HCRRA), the MPRB owns, for park purposes, a permanent easement for a right-of-way for a canal connecting Lake of the Isles and Cedar Lake.

Recreational features within the channel/lagoon include the large curved lagoon to the east of the Kenilworth Corridor and the narrow and relatively straight channel to the west of the Kenilworth Corridor. Most of the area around the lagoon has relatively long and gently sloping grass banks, where the banks of the channel are generally steeper, narrower, and have some remaining wood and stone retaining walls. The channel typically free-flows during late spring, summer and early fall months and it is typically frozen during late fall, winter, and early spring months. During summer months, activities through the waterway include canoeing, kayaking, and paddle boarding (docks are provided at several locations within the Chain of Lakes Regional Park and rentals are provided on Lake Calhoun). During winter months, activities through the frozen waterway include cross country skiing, snowshoeing, fat-tire biking, and walking. Weather and ice/snow conditions permitting, a groomed cross country ski trail is maintained in the Chain of Lakes Park during mid-winter months. The annual City of Lakes Loppet Cross Country Ski Festival, which encompasses much of the Chain of Lakes Regional Park and passes through the Kenilworth Channel/Lagoon, typically occurs within early February, weather and ice/snow conditions permitting. The event, which is organized by a non-profit foundation and which includes a wide variety of activities, spans a weekend, and attracts

¹³ FTA, MnHPO, and the Council have also identified the Kenilworth Lagoon as a historic property, as a contributing element of the Grand Rounds Historic District, similar to but distinct from the Kenilworth Channel/Lagoon as an element of the Minneapolis Chain of Lakes Regional Park. The historic and park properties are treated separately within this draft Section 4(f) Evaluation Update as they have somewhat different boundaries, different Section 4(f) qualifying characteristics, and different officials with jurisdiction. See the *Kenilworth Lagoon Historic Property and Kenilworth Channel/Lagoon Park Property Section 4(f) Classification Technical Memorandum* in Appendix I of this Final EIS for more detail. See Section 6.6.2.15 for the Section 4(f) analysis for the Kenilworth Lagoon historical property.

¹⁴ The approximately 1555.3-acre Minneapolis Chain of Lakes Regional Park encompasses the following: Lake Harriet, Lyndale Park, Lyndale Farmstead, Lake Calhoun, Lake of the Isles, Cedar Lake and Brownie Lake (and waterway connections between the lakes). Per annual use estimates by the MPRB, approximately 5,361,200 people visited the Minneapolis Chain of Lakes Regional Park in 2012.

approximately 10,000 participants. Activities on the northern grassy banks of the lagoon, between West Lake of the Isles Parkway and South Upton Avenue, include picnicking, walking, sightseeing, wildlife viewing, and passive relaxation.

As the park is a publicly owned, publicly accessible park of local significance, the Kenilworth Channel/Lagoon is considered by FTA to be a Section 4(f)-protected property. Consultation between MPRB, City of Minneapolis, and project staff on design issues related to the park has occurred throughout the design refinement process that occurred after publication of the Draft EIS. In addition, project staff held meetings with MPRB staff focused on parks owned and operated by the MPRB, the Section 4(f) process and documentation, and FTA's determination for the park on February 13 and March 6, 2015.¹⁵ See the MPRB information request letter and response provided in Appendix I for further information about the Kenilworth Channel/Lagoon.

B. Determination of Permanent Section 4(f) Use: Section 4(f) *de minimis* Use

The Project will result in changes to the facilities currently located within the Kenilworth Channel/Lagoon, including the following (see Exhibit 6.6-16A/B):

- Removal of the two existing wood bridges, supported by wood piers in the channel, that carry the existing freight rail tracks and multipurpose trail across the waterway;
- Construction of three new separate bridges with new supporting piers in the channel, with a combined bridge width that will be approximately double that of the existing wood bridges (to carry freight rail and light rail tracks and the multipurpose trail); and
- Modifications to the topographical features, vegetation, and WPA-era retaining walls of the channel that will be needed to accommodate the new bridges.

The proposed light rail improvements and modifications to the freight rail and trail alignments will occur within approximately 0.3 acre of the approximately 10.3-acre Kenilworth Channel/Lagoon (see Exhibit 6.6-16B). See Section 6.6.2.15 for visual simulations reflecting the proposed designs of the bridges.

Under the Project, the Council will acquire the right-of-way within the Kenilworth Corridor from BNSF and HCRRA. The existing recreational easement owned by the MPRB that is attached to the BNSF and HCRRA rights-of-way will remain unchanged. In the long-term, the existing recreational activities, features, and attributes within the Kenilworth Channel/Lagoon will not be adversely affected under the Project and the horizontal clearances between the banks and the new piers will be of sufficient width to accommodate recreational activities that occur within the channel/lagoon. Further, the project will not have an adverse effect on the activities, features, or attributes qualifying the easement for protection under Section 4(f). Removal of the existing bridges and construction of the new bridges will allow for the continuation of park uses and recreational activities within the easement – recreational watercraft will be able to utilize the channel connection between Cedar Lake and Lake of the Isles in the same manner they do currently.

As noted in Section 3.7, the Project will affect the view within the Kenilworth Channel/Lagoon; however, the assessment is that the overall level of visual impact will be low.¹⁶ The existing and immediately adjacent trail vegetation within this corridor, as seen in this view, will be removed. The vegetation removal is necessary to accommodate the aboveground segment of the light rail alignment as it approaches the lagoon crossing. The freight line will also be shifted to the north. Fencing will be installed on both sides of the bike/pedestrian trail corridor. Reduction in the tree masses, again immediately adjacent to the trail, and elimination of the existing split rail fencing along the trail, will reduce the vividness of the view. There will be a slight reduction in visual intactness and a limited reduction in visual unity. The reduction in the visual quality of this view will be moderate. As in other areas along the Kenilworth Corridor, the level of visual sensitivity is high.

¹⁵ See Section 6.7 for a project-wide description of the FTA's and the Council's Section 4(f) consultation process and activities.

¹⁶ Based on the FHWA visual guidelines and the Project's preliminary engineering plans. See Section 3.7 for additional information on the Project's visual and aesthetic analysis.

EXHIBIT 6.6-16A

Final Section 4(f) Evaluation – Kenilworth Channel/Lagoon Recreational Resource (element of the Minneapolis Chain of Lakes Regional Park)

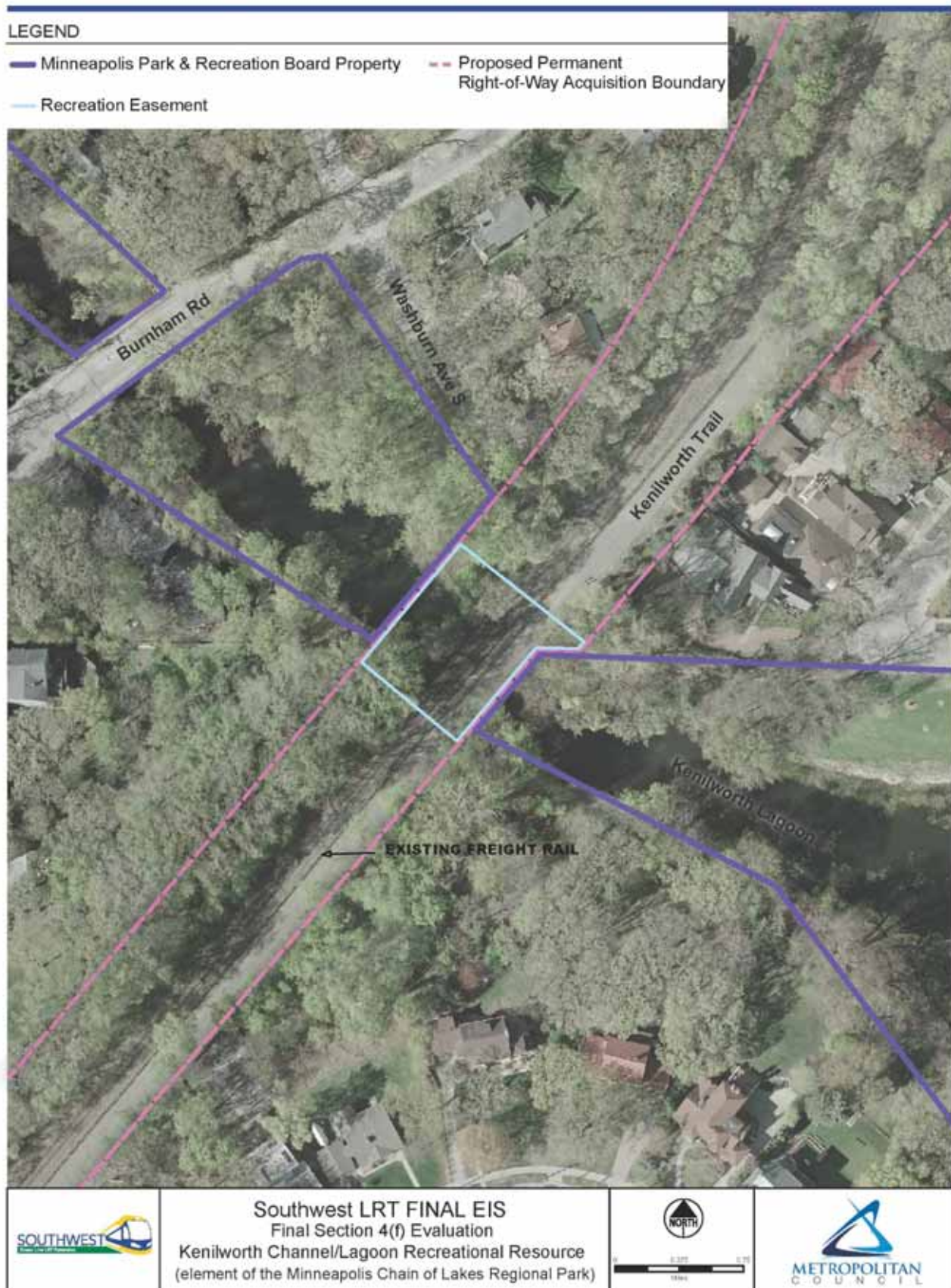
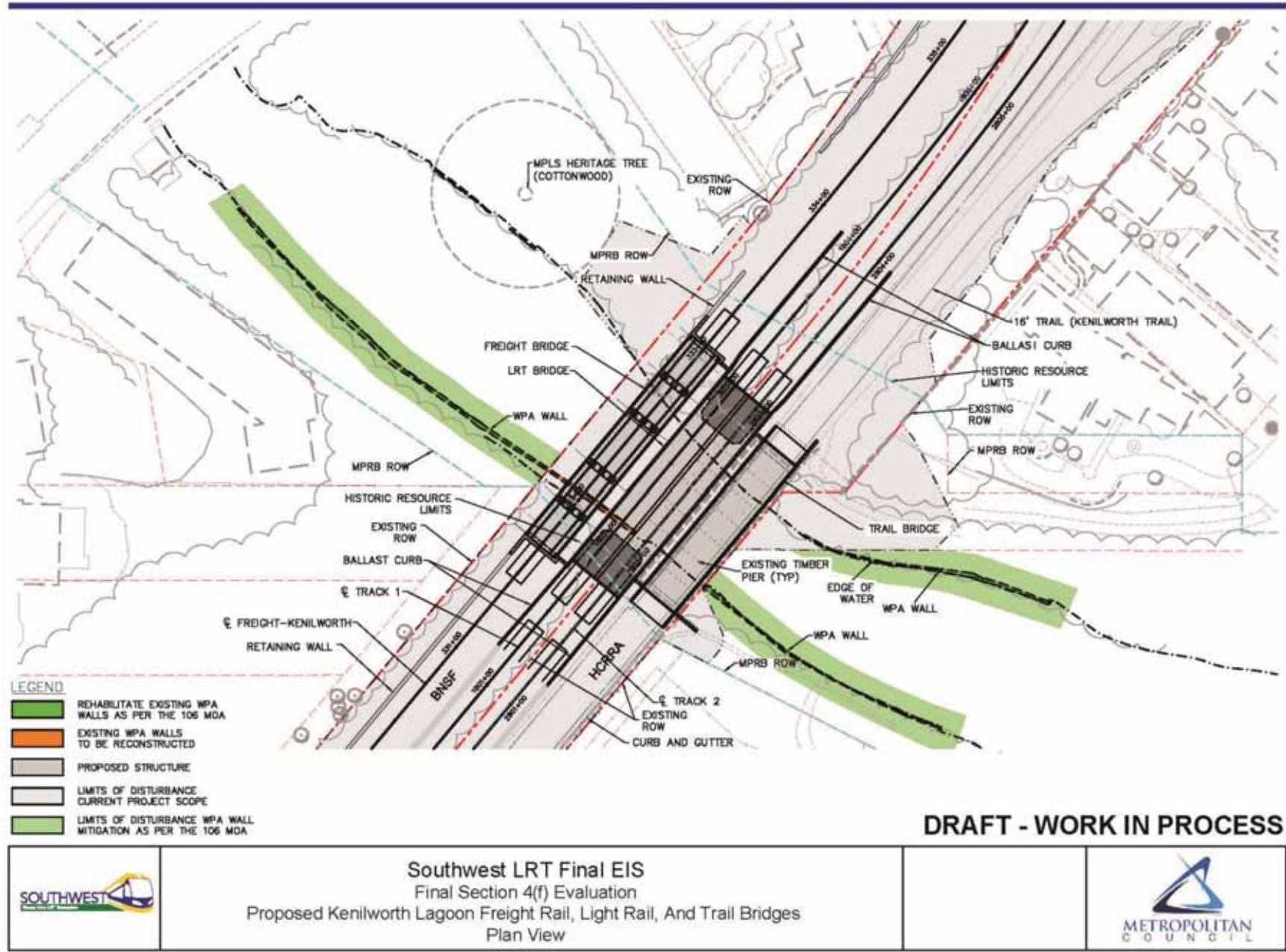


EXHIBIT 6.6-16B

Final Section 4(f) Evaluation – Proposed Kenilworth Channel/Lagoon Freight Rail, Light Rail, and Trail Bridges — Plan View



Because the visual sensitivity of this view is high and the change in the level of visual quality will be moderate, the level of visual impact will be moderate.

The Project does not anticipate any disruption to winter activities, such as cross-country skiing, related to a potential reduction in snow underneath the three channel spans (i.e., new bridges east to west: freight, LRT, and bicycle/pedestrian), because gaps between each of the three new bridges will allow direct and blowing snow onto the channel below and the ability of the channel to freeze during winter conditions will not be altered by the presence of the new bridges.

The Kenilworth Channel/Lagoon will also be affected by light rail-generated noise as light rail vehicles will cross the waterway on a new bridge (see Section 3.12 for additional information on noise impact methods, terminology, impacts, and mitigation). For the noise analysis, two separate areas of the Channel/Lagoon were identified as sensitive noise receptors. First, the waterway itself (termed the Kenilworth Channel in the noise analysis) was classified as a Category 3 land use. That area of the Kenilworth Channel Lagoon (approximately 40 feet on either side of the proposed light rail alignment) would have a Moderate noise impact based on FTA's light rail noise criteria without any mitigation measures. Mitigation measures to address the projected Moderate noise impacts in the Kenilworth Channel/Lagoon without mitigation are included in the Project's Section 106 Memorandum of Agreement and will be included in the Project when it is constructed (see Appendix H). The mitigation measure at this location will be a two-foot-high noise barrier (i.e., parapet wall) above the top of the rail on both sides of the LRT bridge, along with rail dampers on both tracks, extending 150 feet in each direction from the center of the LRT bridge (300 feet total). This mitigation measure will reduce noise levels at the channel/lagoon, resulting in a moderate noise impact to the Kenilworth Channel/Lagoon.

Second, the northern bank of the lagoon, generally between West Lake of the Isles Parkway and South Upton Avenue (termed the Kenilworth Lagoon Bank in the noise analysis), was classified as a Category 1 land use, with stricter noise impact standards than the Category 3 land use. However, because of the distance between the light rail tracks and the western point of the Category 1 land use, noise levels under the Project at that location will not exceed FTA's Severe or Moderate criteria.

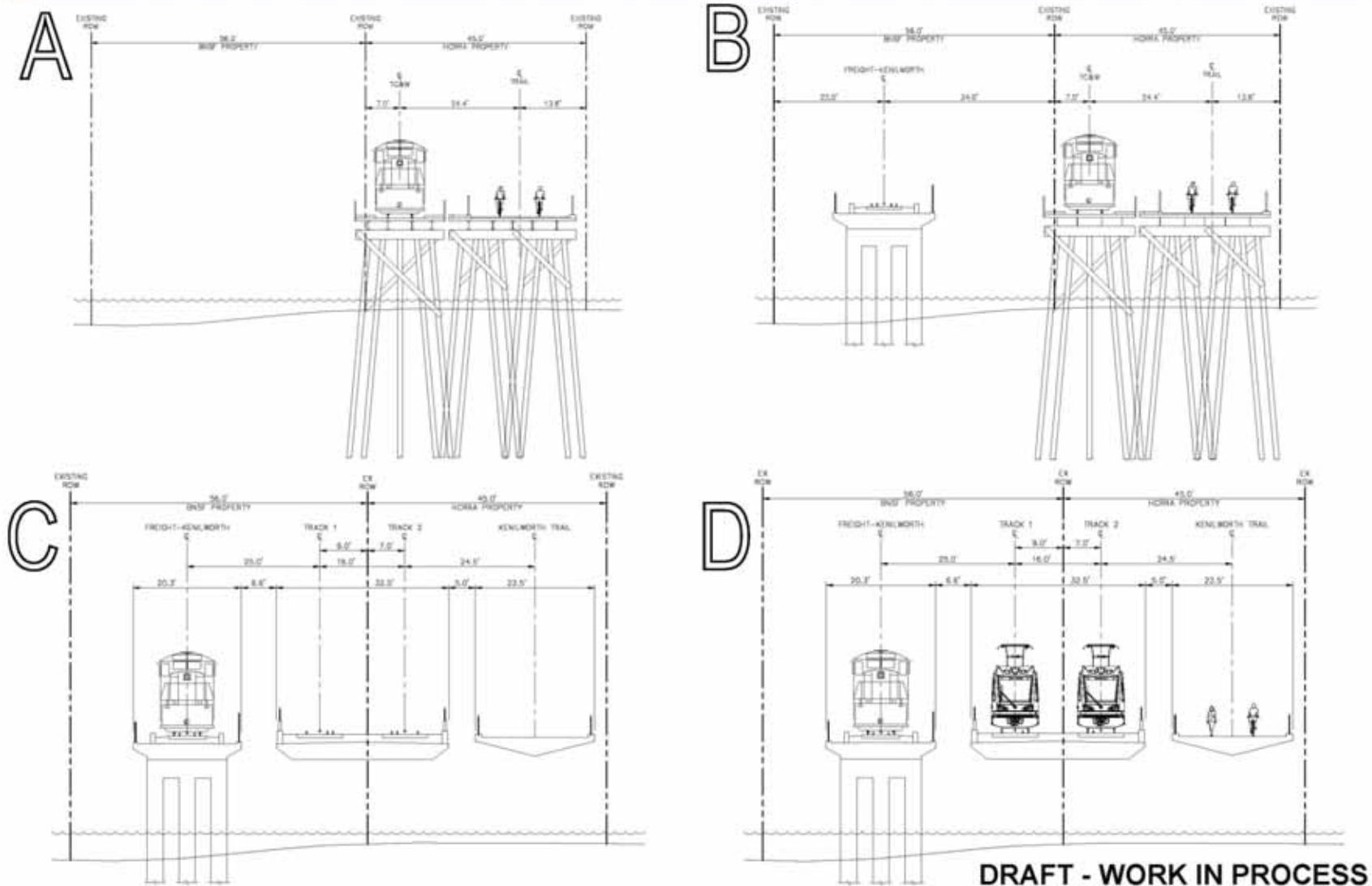
Under the Project, construction activities within the easement area will occur to allow for the removal of the two existing wood bridges and construction of the three new bridges. Those construction activities will require temporary closure/s of the lagoon for safety, and minimization and mitigation measures related to the closure/s have been developed, with MPRB consultation, and are included in the project's Section 106 Memorandum of Agreement (see Appendix H). Exhibit 6.6-17 illustrates the general construction sequence that will be used to construct the new bridges over the Kenilworth Channel/Lagoon.

The FTA, Council, and MPRB considered alternatives and design adjustments to avoid or minimize the use of the Kenilworth Channel/Lagoon. Those avoidance alternatives and minimization design adjustments are described in greater detail in Section 6.6.2.15, under the discussion of the non-*de minimis* use of Kenilworth Lagoon, the Section 106 historic property. In summary, the No Build Alternative and Enhanced Bus Alternative as evaluated in the Draft EIS are the only full Section 4(f) avoidance alternatives identified and neither of them would be prudent because they would not meet the project's purpose and need. Further, the Council and the MPRB independently developed and evaluated design adjustments that would have placed the proposed light rail alignment in a tunnel under the Kenilworth Channel/Lagoon using cut-and-cover and jacked-box tunnel construction techniques, respectively. Those analyses both concluded that the design adjustments will not be prudent due to substantial cost increases and delays in project benefits resulting from protracted construction schedules required to construct the tunnel segments under the Kenilworth Channel/Lagoon. See Section 2.2.4 and Appendix F of this Final EIS for additional information on the design adjustment that will have constructed a cut-and-cover tunnel under the Kenilworth Channel/Lagoon; and see Appendix I for additional information on the design adjustment that will have constructed a jacked-box tunnel under the Kenilworth Channel/Lagoon.

Based on the analysis and design as summarized in this section, FTA has concluded that there will be a Section 4(f) *de minimis* use of the Kenilworth Channel/Lagoon where the HCRRA and BNSF rights-of-way cross the property, consistent with 23 CFR Part 774.5(b). While the Project will result in the placement of

EXHIBIT 6.6-17

Final Section 4(f) Evaluation – Bridge Construction Sequence over the Kenilworth Channel/Lagoon



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Final Section 4(f) Evaluation
Bridge Construction Sequence over the Kenilworth Channel/Lagoon



new bridge piers and bridge abutments within the park property boundary, the Project will not affect the protected activities, features, and attributes of the property with appropriate minimization and mitigation measures as document in the Project's Section 106 Agreement.

C. Section 4(f) Use Determination

Through coordination with MPRB and based on the design of the Project as described in this section, FTA has determined that the proposed permanent and temporary uses by the Project will not adversely affect the features, attributes or activities that qualify the Kenilworth Channel/Lagoon for Section 4(f) protection. Further, FTA has considered public comment received during the public comment period for the Supplemental Draft EIS that addressed the preliminary Section 4(f) *de minimis* impact determination for the Kenilworth Channel/Lagoon that was included in the Draft Section 4(f) Evaluation Update. Consistent with the requirements of 23 CFR Part 774.5(b), FTA has reached a *de minimis* use determination for the Project at the Kenilworth Channel/Lagoon. Following the close of the public comment period on the preliminary Section 4(f) *de minimis* use determination, MPRB has concurred in writing with this determination (see Appendix I).

6.6.1.13 Cedar Lake Park – Temporary Occupancy Exception

A. Property Description

Cedar Lake Park¹⁷ is a 288-acre regional park located at Cedar Lake Parkway and Basswood Road in Minneapolis and is part of the Chain of Lakes Regional Park. Cedar Lake makes up approximately 173 acres of Cedar Lake Park. Cedar Lake Park is owned and operated by MPRB. There is an existing freight rail track in the park that occupies approximately 0.4 acres of undeveloped land just inside the northeastern boundary the park. The Cedar Lake Trail traverses the northernmost portion of the park, crossing the existing freight rail tracks at-grade and then connecting to the Kenilworth Trail within the HCRRA right-of-way. Per annual use estimates, approximately 418,700 people visited Cedar Lake Park in 2012 (Council, 2013). Per MPRB 2014 beach attendance counts, East Cedar Beach had 16,649 visitors and facilities within the park include Cedar Lake, beaches, wooded areas, picnic areas, a canoe/kayak launch and racks, paths, and off-street parking. Recreational activities within the park include boating, fishing, cross country skiing, skating, picnicking, hiking, running, and bicycling. Additional information on Cedar Lake Park as an element of the Chain of Lakes Regional Park can be found in the prior property description for the Kenilworth Channel/Lagoon; further information about Cedar Lake Park, including detailed user count data, can be found in Appendix I of this Final EIS. Consultation between MPRB, City of Minneapolis, and project staff on design issues related to the park has occurred throughout the design refinement process that occurred after publication of the Draft EIS. In addition, project staff held meetings with MPRB staff focused on parks owned and operated by the MPRB, the Section 4(f) process and documentation, and FTA's determination for the park on February 13 and March 6, 2015.¹⁸

As the park is a publicly owned, publicly accessible park of local significance, Cedar Lake Park is considered, by FTA, to be a Section 4(f) protected property.

¹⁷ FTA, MnHPO, and the Council have also identified Cedar Lake Park as a historic property, as a contributing element of the Grand Rounds Historic District, similar to but distinct from Cedar Lake Park as a recreational element of the Minneapolis Chain of Lakes Regional Park. The historic and park properties are treated separately within this draft Section 4(f) Evaluation Update as they have somewhat different boundaries, different Section 4(f) qualifying characteristics, and different officials with jurisdiction. See Section 6.6.2.15 of this Final EIS for the updated Section 4(f) analysis for the Kenilworth Lagoon historical property.

¹⁸ See Section 6.7 of this Final EIS for a project-wide description of the FTA's and the Council's Section 4(f) consultation process and activities.

B. Determination of Permanent Section 4(f) Use

As illustrated on Exhibits 6.6-18 and 6.6-19 and the preliminary Southwest LRT preliminary engineering plans in Appendix E, the Project will not result in a permanent incorporation of land from Cedar Lake Park; therefore, there will not be a Section 4(f) permanent use of the property.

Since publication of the Supplemental Draft EIS and Draft Section 4(f) Evaluation Update, the Council has approved design adjustments affecting Cedar Lake Park, particularly at Cedar Lake Junction (see Exhibit 6.6-19). Following is a description of changes that have occurred since publication of the Draft Section 4(f) Evaluation Update that form the basis of FTA's determination of no Section 4(f) use of Cedar Lake Park.

Within the Draft Section 4(f) Evaluation Update, it was anticipated that there would be a permanent maintenance easement within Cedar Lake Park at East Cedar Beach that would have been associated with the short extension of a sidewalk into the park (on the West side of West 21st Street). As documented in the Draft Section 4(f) Update, FTA had preliminarily determined that the use of Cedar Lake Park at that location would have been *de minimis*. Since the time, the Draft Section 4(f) Evaluation Update was published, the MPRB notified the Council that it would maintain the proposed new sidewalk within the park at East Cedar Beach, obviating the need for a permanent maintenance easement within the park, and thereby eliminating any permanent Section 4(f) use of the park at that location. Other than the removal of the anticipated permanent maintenance agreement, there have been no design adjustments within the park at East Cedar Beach.

Also, within the Draft Section 4(f) Evaluation Update, it was anticipated that there would be a new bridge constructed for the Cedar Lake Trail, to provide a grade-separated trail crossing of the existing freight rail and new light rail tracks to the east of Cedar Lake Park. That new bridge and a proposed related maintenance easement within the park would have constituted a use of the park under Section 4(f). As documented in the Draft Section 4(f) Evaluation Update, FTA had preliminarily determined that the use of Cedar Lake Park at that location would have been *de minimis*. With design adjustments adopted by the Council in July 2015, the proposed new bridge for Cedar Lake Trail has been replaced with retaining the trail's at-grade crossing of the existing freight rail tracks and a new at-grade trail crossing of the proposed light rail tracks. Further, the location of the proposed Penn Station has been moved southwest to allow for the trail crossing to be integrated into the station. As a result, there will be no new trail bridge or related permanent maintenance easement within the park at Cedar Lake Junction, eliminating any permanent Section 4(f) use of the park by the Project at that location.

C. Determination of Temporary Occupancy Exception

Two areas of Cedar Lake Park will be affected by construction activities for the Southwest LRT Project: East Cedar Beach and Cedar Lake Junction.

- **East Cedar Beach.** As illustrated in Exhibit 6.6-14, the Project will result in the extension of the sidewalk on the south side of South Upton Avenue, between the existing HCRRA right-of-way and the pedestrian entryway into East Cedar Beach. The sidewalk extension will be included within an area of temporary occupancy (approximately 1,300 square feet or 0.03 acre) that will allow for the construction of the sidewalk. The MPRB will maintain the new sidewalk within the park and there will be no permanent transfer of park property from the MPRB to the Council or other jurisdiction. The area where the sidewalk will be constructed is not currently used or planned for recreational activities. The area generally consists of non-landscaped vegetation. No other modifications will be made to Cedar Lake Park at East Cedar Beach as a result of the Project. Transit access to the park will be improved due to its proximity to the proposed 21st Street Station. East Cedar Beach has not been identified as a noise sensitive land use; therefore, no noise impacts to that area of Cedar Lake Park have been identified (see Section 3.12 of this Final EIS for additional information on the project's noise analysis). Because of existing vegetation that will be retained between the park and the HCRRA right-of-way, the proposed light rail alignment and station will generally not be visible from East Cedar Beach.

EXHIBIT 6.6-18

Final Section 4(f) Evaluation – Cedar Lake Park at East Cedar Beach

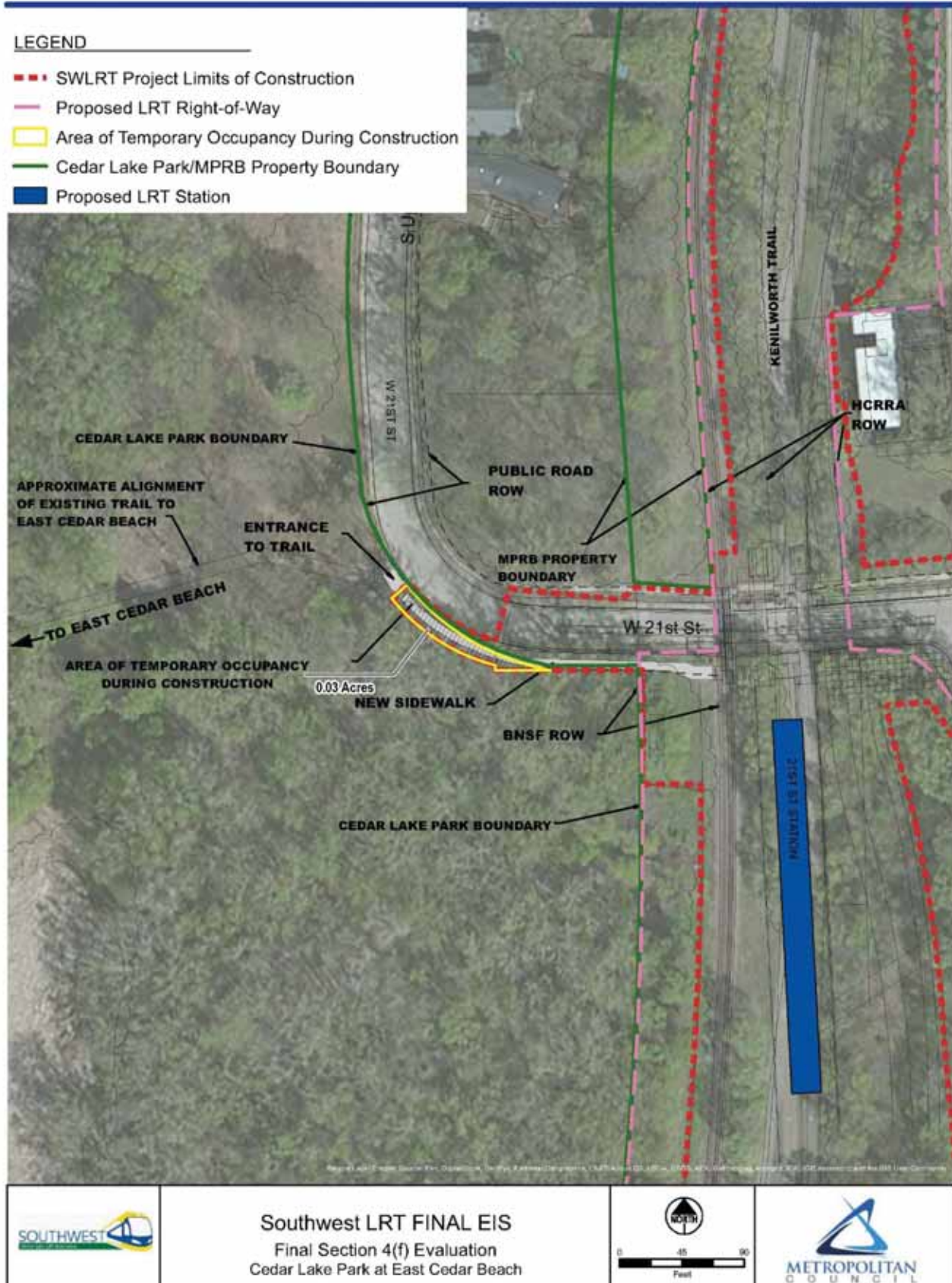
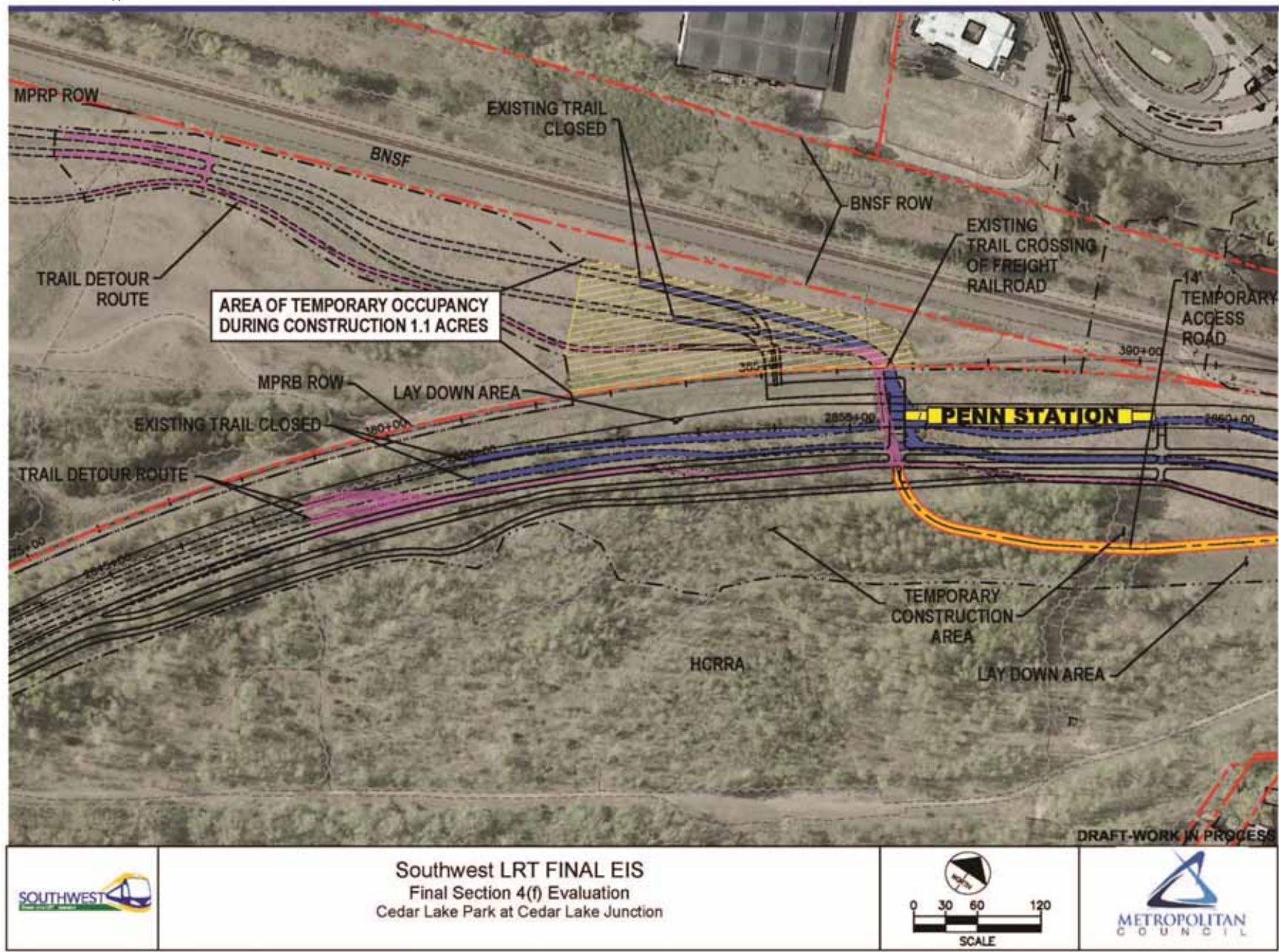


EXHIBIT 6.6-19

Final Section 4(f) Evaluation – Cedar Lake Park at Cedar Lake Junction



- **Cedar Lake Junction.** As illustrated in Exhibit 6.6-15, the Project will result in a variety of permanent and short-term (construction-related) changes to Cedar Lake Park at Cedar Lake Junction (where the Kenilworth Corridor and the Wayzata Subdivision meet). In general, the changes will affect the Cedar Lake Trail within the Cedar Lake Park. In summary, the trail will be realigned within Cedar Lake Park to allow the trail to cross over the existing freight rail alignment and the proposed light rail alignment at-grade, connecting to the Kenilworth Trail to the east of the existing HCRRA right-of-way. All existing trail connections for the Cedar Lake Trail will be maintained in the long-term under the Project. Except for the potential for short-term trail closures to ensure trail user safety, all existing trail connections will be maintained during construction of the new trail alignment. Under the current construction plan, temporary trails will be constructed to allow for the removal of existing trail segments and construction of new trail segments. Construction activities within the park will occur within approximately 1.1 acres of the park. Construction activities within the park will be closely coordinated with MPRB to help avoid and minimize effect on recreational activities within the park. The project will also provide the MPRB and the public with ongoing notification of construction activities within the park, such as the timing and location of trail detours. All areas of the park that are affected by construction activities outside of the permanent easement area will be restored to existing conditions or better. Except for recreation activities on the Cedar Lake Trail, the area of Cedar Lake Park affected by the reconstruction of the trail does not include recreational activities, features, and attributes that qualify the park as a Section 4(f) recreational property.

Section 4(f) temporary occupancy exception criteria are addressed below with respect to the construction impacts at Cedar Lake Park:

1. **Criterion:** *Duration is temporary (that is, the occupancy is shorter than the time needed for construction of the project, and there is no change in ownership of the property).*

Finding: The overall duration of construction for the entire project is approximately four years. The duration of the construction activities for the portion within Cedar Lake Park is estimated to extend for approximately up to 18 calendar months – additional time may be needed for restoration activities within the park, depending on variables, such as seasonal timing of the activities and weather conditions. There will be no change in ownership of the parkland that will be temporarily occupied.

2. **Criterion:** *Scope of work is minor (that is, the nature and magnitude of the changes to the Section 4(f) properties are minimal).*

Finding: The parts of Cedar Lake Park to be temporarily occupied during construction include portions of the park's access at West 21st Street and at Cedar Lake Junction via the Cedar Lake Trail. Pedestrians and bicyclists entering the park at these locations will be provided with temporary path detours as needed to maintain accessibility to the park. The park will still be accessible to the public throughout construction for vehicles, bicycles, and pedestrians via variety of other streets, paths, and sidewalks. The part of the park to be temporarily occupied also includes open grass or vegetated areas, which do not contain any other recreational features or amenities.

3. **Criterion:** *There are no anticipated permanent adverse physical impacts or permanent interference with the protected activities, features, or attributes of the property.*

Finding: None of the aforementioned activities, features, or attributes of Cedar Lake Park will be permanently impacted nor will temporary construction actions at the park permanently or temporarily interfere with visitors utilizing the park as they do currently. Council staff will coordinate construction activities with park staff from the MPRB to schedule construction activities so that they avoid park activities identified by the MPRB that should be considered when setting the schedule for construction activities. As illustrated in Exhibit 6.6-19, bicycle and pedestrian access to/from the park will be maintained within the temporary occupancy areas, with only short closures needed to safely complete some construction activities. Impacts related to temporary changes to parking and access will be mitigated by development of a Construction Communication Plan, which will include advance notice of construction activities and highlighting road, sidewalk, and trail closures and detour routes.

4. **Criterion:** *The property is restored to the same or better condition that existed prior to the project.*

Finding: The portions of the park to be temporarily occupied during construction will be restored to existing conditions or better – this includes the addition of the new sidewalk near East Cedar Beach and the multi-use path and landscaped/vegetated areas at Cedar Lake Junction.

5. **Criterion:** *There is documented agreement from the appropriate federal, state, or local officials having jurisdiction over the property regarding the above conditions.*

Finding: FTA, MPRB, and the Council have initiated efforts to help avoid, minimize, and mitigate impacts to Cedar Lake Park, including participation in Section 4(f) Coordination meetings in February and March 2015. Those meetings also included participation by staff from Hennepin County and the City of Minneapolis. See Appendix I for copies of notes and materials for those meetings. For both areas of Cedar Lake Park that will be affected by the Project, FTA, MPRB, and the Council will continue to coordinate to help avoid, minimize, and mitigate impacts to the park through publication of the Final Section 4(f) Evaluation and during construction.

The MPRB has agreed in writing that the above temporary occupation exception criteria are met by the Project (see Appendix I).

Based on the analysis, design, and avoidance, minimization, and identified mitigation measures as summarized in this section, FTA has concluded that there will be a Section 4(f) *de minimis* use of the Kenilworth Channel/Lagoon, consistent with 23 CFR Part 774.5(b).

D. Determination of Constructive Section 4(f) Use

Existing bicycle, pedestrian, and vehicular access to the park will be maintained under the proposed Project. The proposed 21st Street Station and Penn Station are within walking distance of Cedar Lake Park, thereby providing improved transit access to the park. Although the sound of light rail trains will be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria, which are discussed in Section 3.12 of this Final EIS. Changes in development density in areas surrounding proposed light rail stations could result in an increase in Cedar Lake Park usage, which could have potential for both positive and negative consequences. The Project will result in changes in the park's setting and a visitor's visual experience through the introduction of the light rail alignment immediately east of the park. The visual changes and impacts will not alter or impair the overall use or function of the park.

In summary, the proximity impacts of the Project on Cedar Lake Park will not substantially impair the qualifying activities, features, or attributes of the park and; therefore, FTA has determined that there will be no Section 4(f) constructive use of Cedar Lake under the Project, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent Section 4(f) use of Cedar Lake Park and that proposed construction activities within the park will meet the criteria for a Temporary Occupancy Exception described in 23 CFR 774.13(d).

6.6.1.14 Bryn Mawr Meadows Park – *De Minimis* Determination

A. Section 4(f) Property Description

Bryn Mawr Meadows Park is a 51-acre regional park located at 601 Morgan Avenue South in Minneapolis. Bryn Mawr Meadows Park is owned and operated by MPRB and contains two baseball fields, two broomball rinks, cricket field, ice rink, 10-table picnic area, restroom facilities, soccer field, eleven softball fields, biking path, sports facility, tennis court, tot lot/playground, wading pool, and walking path. As the park is a publicly owned, publicly accessible park of local significance, Bryn Mawr Meadows Park is considered by FTA to be a Section 4(f) protected property. See the MPRB information request letter in Appendix I for further information about Bryn Mawr Meadows Park. Consultation between MPRB, City of Minneapolis, and project staff on design issues related to the park has occurred throughout the design refinement process that occurred after publication of the Draft EIS. In addition, project staff held meetings with MPRB staff focused

on parks owned and operated by the MPRB, the Section 4(f) process and documentation, and FTA's determination for the park on February 13 and March 6, 2015.¹⁹

B. Determination of Permanent Section 4(f) Use

As illustrated in Exhibit 6.6-20, the Project will result in a variety of permanent and short-term (construction-related) changes to Bryn Mawr Meadows Park, described as follows.

The proposed changes will affect the Luce Line Trail in Bryn Mawr Meadows Park, as well as two internal park trails. In particular, the Luce Line Trail will be realigned within Bryn Mawr Meadows Park to allow the trail to cross over a new bridge that will cross BNSF freight tracks to the east, connecting to the proposed Van White Station and Cedar Lake Trail (which provides connections to the Kenilworth Trail). A new bicycle/pedestrian bridge will replace the existing bridge that crosses BNSF freight rail tracks toward the south. The existing bridge is owned and maintained by MnDOT and the northern bridgehead is partially located within Bryn Mawr Meadows Park. A portion of the new bridge will be located within Bryn Mawr Meadows Park; this new bridge will be north of, and parallel to, the southern border of the park (just north of the BNSF freight rail right-of-way). The remaining portion of the new bridge will provide a connection between the portion located within the park and the proposed Van White Station and Cedar Lake Trail, across the BNSF freight rail and proposed light rail tracks. The current design of the new bridge has been prepared based on the Council's *Visual Quality Guidelines for Key Structures* (Council, 2015), which was developed in coordination with staff from local jurisdictions affected by the Project's proposed key structures. These guidelines allow for a consistent design approach for the key structures, allowing for design adjustments reflecting their local context, including Bryn Mawr Meadows Park. Prior to construction of the proposed new bridge for Luce Line Trail, the Council will conclude its consultation with the MPRB on the design of the proposed new bridge.

A portion of the existing at-grade trail within Bryn Mawr Meadows Park will be relocated to connect to the new bridge and a portion of the existing at-grade trail will be replaced with an at-grade trail segment at a new location within the park. The new elevated section of Luce Line Trail within the park will be located within an approximately 0.4-acre proposed permanent maintenance easement, which could be acquired by another jurisdiction. The maintenance easement will include an area around the bridge that will allow for continued maintenance of the bridge and will stipulate limitations on improvements and vegetation allowed within the maintenance area (to ensure continued maintenance access to the bridge). The realignment of the trails within the park will ultimately be determined through continued consultation between FTA, the Council, and MPRB, which will work to avoid, minimize, and mitigate impacts to the park's qualifying activities, features, and attributes.

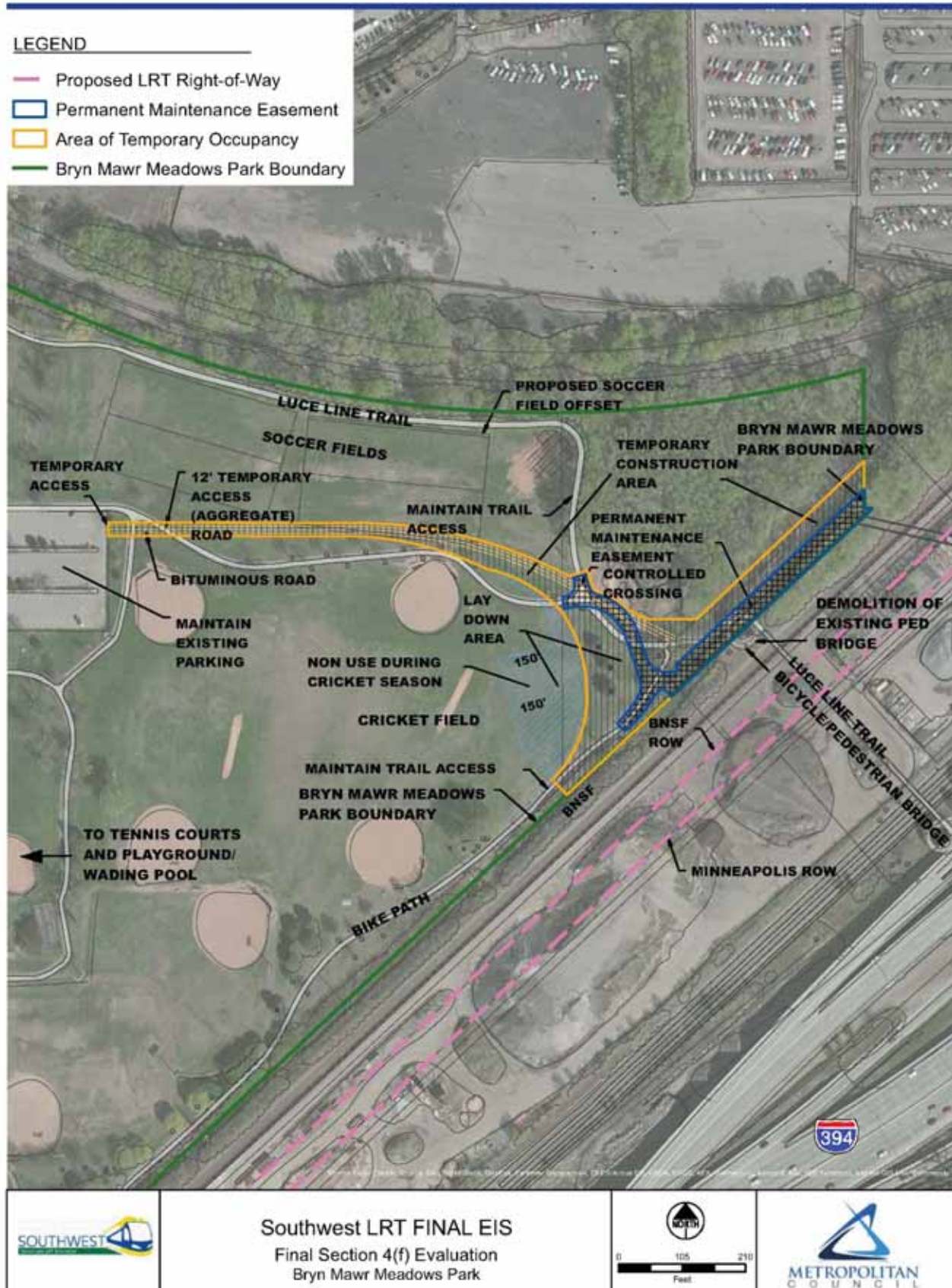
Under the current design, construction activities outside of the permanent maintenance easement area will occur within approximately 1.5 acres of the park; those areas are illustrated in Exhibit 6.6-20. Construction activities within the park will include:

- The construction of a temporary bituminous access road connecting the existing park parking lot to the site of the new Luce Line Trail bridge (use of the parking lot by park visitors will be maintained during construction);
- Truck and other equipment use of the temporary access road, laydown area, temporary safety barriers to separate the temporary construction activities from park activities, and permanent maintenance easement area as required to construct the proposed improvements;
- Removal of existing trees in the construction laydown area and temporary access road;

¹⁹ See Section 6.7 of this Final EIS for a project-wide description of the FTA's and the Council's Section 4(f) consultation process and activities.

EXHIBIT 6.6-20

Final Section 4(f) Evaluation – Bryn Mawr Meadows Park



- Preparation and use of a construction laydown area (e.g., for the staging of construction material and equipment), the area of which will be reduced during cricket season to avoid impacting the existing cricket field;
- Grading, paving, bridge construction, landscaping, and other activities associated with construction of the new trail bridge and at-grade trail segments;
- Temporary realignment of the existing eastern soccer field to accommodate construction of the temporary construction access road;
- Temporary realignment of park trail segments to allow for the construction of the temporary construction access road, the new western bridge, and the new at-grade trail segments;
- Removal of existing trail segments that will be replaced with the new trail segments, which will include replanting and landscaping as per specifications agreed upon between the Council and MPRB;
- Construction detour information, flagging at controlled crossings, and other related activities; and
- Restoration of all park features to pre-construction conditions or better, based on specifications agreed to between the Council and MPRB (e.g., replacement of trees, restoration of landscaping within the construction laydown area, construction access road and temporary trail segments).

All existing trail connections for the Luce Line Trail will be maintained in the long-term under the Project. Except for the potential for short-term trail closures to ensure trail user safety, all existing trail connections will be maintained during construction of the new trail alignment and elevated trail crossing. During those short trail closures, trail users will be provided with detour routes and information. Under the current construction plan, temporary trails will be constructed to allow for the removal of existing trail segments and construction of new trail segments. Construction activities within Bryn Mawr Meadows Park will be closely coordinated with MPRB to help avoid and minimize effects on recreational activities within the park. The project will also provide the MPRB and the public with ongoing notification of construction activities within the park, such as the timing and location of trail detours. All areas of the park that are affected by construction activities outside of the permanent easement area will be restored to existing conditions or better.

FTA, MPRB, and the Council have made efforts to help avoid, minimize, and mitigate impacts to Bryn Mawr Meadows Park, including participation in Section 4(f) coordination meetings in February and March 2015. Those meetings also included participation by staff from Hennepin County and the City of Minneapolis. See Appendix I for copies of the notes and materials for those meetings. For the areas of Bryn Mawr Meadows Park that will be affected by the Project, FTA, MPRB, and the Council have coordinated to define ways to help avoid, minimize, and mitigate impacts to the park.

Based on the analysis, design, and avoidance, minimization, and mitigation measures identified as summarized in this section, FTA has concluded that there will be a Section 4(f) *de minimis* use of Bryn Mawr Meadows Park, consistent with 23 CFR Part 774.5(b).

C. Section 4(f) Use Determination

Through coordination with MPRB and based on the design and analysis as described in this section, FTA has determined that the proposed permanent and temporary uses by the Project will not adversely affect the features, attributes or activities that qualify Bryn Mawr Meadows Park for Section 4(f) protection. Further, FTA has considered public comment received during the public comment period for the Supplemental Draft EIS that addressed the preliminary Section 4(f) *de minimis* impact determination for the Bryn Mawr Meadows Park that was included in the Draft Section 4(f) Evaluation Update. Consistent with the requirements of 23 CFR Part 774.5(b), FTA has reached a *de minimis* use determination for the Project at the Bryn Mawr Meadows Park. Following the close of the public comment period on the preliminary Section 4(f) *de minimis* use determination, MPRB has concurred in writing with this determination (see Appendix I).

6.6.2 Historic Properties

Exhibits 6.6-1 through 6.6-2A show the locations of historical properties within the Project study area identified as listed on or eligible for the NRHP and assessed for Section 4(f) use.²⁰ Detailed maps of these resources are provided in subsequent sections of this document, as appropriate. Table 6.6-3 lists the resource name, location, and jurisdictional owner and indicates Section 4(f) use assessment; park/recreation resources are listed from south-to-north in the Project study area.

TABLE 6.6-3
Summary of Permanent Section 4(f) Historic Property Uses^a

Section 4(f) Property – Park/Recreation Area / (MnHPO Inventory Number)	Section 106 Effect	Non- <i>de minimis</i> Use	<i>De minimis</i> Use	No Use	Existing Property Acreage	Acres Permanently Used	% of Property Used
Hopkins City Hall (HE-HOC-026)	No adverse effect			•	1.9	0.0	0%
Hopkins Downtown Commercial Historic District (HE-HOC-027)	No adverse effect			•	7.0	0.0	0%
Minneapolis and St. Louis Railway Depot (HE-HOC-014)	No adverse effect			•	0.24	0.0	0%
Chicago, Milwaukee, St. Paul & Pacific Railroad Depot (HE-SLC-008)	Adverse effect			•	1.3	0.0	0%
Peavey-Haglin Experimental Concrete Grain Elevator (HE-SLC-009)	No adverse effect			•	0.1	0.0	0%
Hoffman Callan Building (HE-SLC-055)	No adverse effect			•	1.2	0.0	0%
Minikahda Club (HE-MPC-17102)	No adverse effect			•	156.0	0.0	0%
Grand Rounds Historic District (XX-PRK-001)	Adverse effect	•			1,657.2 ^b	0.4	0%
Lake Calhoun (MPC-1811) ^c	No adverse effect			•	N/C	0.0	0%
Lake of the Isles (MPC-1824) ^c	No adverse effect			•	N/C	0.0	0%
Lake of the Isles Parkway (MPC-1825) ^c	No adverse effect			•	N/C	0.0	0%
Park Bridge No.4/L5729 (HE-MPC-6901) ^c	No adverse effect			•	N/C	0.0	0%
Cedar Lake Parkway (MPC-1833) ^c	No adverse effect			•	N/C	0.0	0%
Cedar Lake (MPC-1820) ^c	No adverse effect			•	N/C	0.0	0%
Kenilworth Lagoon (MPC-1822) ^c	Adverse effect	•			10.3 ^d	0.4	0.4%
Kenwood Parkway (MPC-1796) ^c	No adverse effect			•	N/C	0.0	0%
Kenwood Park (MPC-01797) ^c	No adverse effect			•	N/C	0.0	0%
Frieda and Henry J. Neils House (HE-MPC-6068)	No adverse effect			•	0.5	0.0	0%

²⁰ The “Kenilworth Corridor” is not a historic or federally protected property unto itself, but rather is a geographical area reference that contains portions of Section 106 historic and Section 4(f) properties (e.g., Kenilworth Channel/Lagoon and Cedar Lake Parkway).

Section 4(f) Property – Park/Recreation Area / (MnHPO Inventory Number)	Section 106 Effect	Non- <i>de minimis</i> Use	<i>De minimis</i> Use	No Use	Existing Property Acreage	Acres Permanently Used	% of Property Used
Lake of the Isles Residential Historic District (HE-MPC-9860)	No adverse effect			•	232.9	0.0	0%
Mahalia & Zachariah Saveland House (HE-MPC-6766)	No adverse effect			•	0.3	0.0	0%
Frank W. and Julia C. Shaw House (HE-MPC-6603)	No adverse effect			•	0.2	0.0	0%
Kenwood Parkway Residential Historic District (HE-MPC-18059)	No adverse effect			•	22.7	0.0	0%
Kenwood Water Tower (MPC-06475)	No adverse effect			•	N/C	0.0	0%
Mac Martin House (HE-MPC-8763)	No adverse effect			•	0.3	0.0	0%
St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District (HE-MPC-16387)	No adverse effect		•		N/C	1.5	0%
Osseo Branch Line of the St. Paul, Minneapolis & Manitoba R.R. Historic District/Great Northern Railway (HPO HE-RRD-002 (district); HE-MPC-16389 (portion of district in Minneapolis))	No adverse effect			•	N/C	0.0	0%
Minneapolis Warehouse Historic District (HE-MPC-0441)	No adverse effect			•	116.5	0.0	0%
William Hood Dunwoody Institute (HE-MPC-6641)	No adverse effect			•	12.8	0.0	0%

^a See Section 6.4.1 of this Final EIS for definitions of the potential types of Section 4(f) uses. The Minikahda Club and Cedar Lake Parkway will be temporarily used by the project during construction of the Southwest LRT Project. FTA has determined that each of those temporary uses will meet the criteria for a Temporary Occupancy Exception under 23 CFR Part 774.13(d). See Section 6.4.4.2 of this Final EIS for a description of the criteria for a Temporary Occupancy Exception. All acreages in this table are approximate. The estimates of acres that will be permanently used are based on current plans illustrated in this section and may change as designs are refined and as FTA and the Council coordinate with the officials with jurisdiction and consider public comment to determine appropriate final avoidance, minimization, and mitigation measures.

^b Acreage estimate only includes the Chain of Lake and the Kenwood elements.

^c Contributing element of Grand Rounds Historic District.

^d Estimate based on the size of the Kenilworth Channel/Lagoon (as an element of the Minneapolis Chain of Lakes Regional Park). N/C = size not calculated.

The remainder of this section addresses Section 4(f) historic properties where Project actions will result in potential uses. Following is a description of the Section 4(f) historic properties within the study area (generally from south to north), including:

1. A description of the Section 4(f) property;
2. A Section 4(f) permanent use determination;
3. A Section 4(f) temporary use determination/temporary occupancy exception determination (for those properties that will not have a Section 4(f) use or a Section 4(f) *de minimis* use);
4. A Section 4(f) constructive use determination (for those properties that will not have a Section 4(f) use); and
5. An overall Section 4(f) determination.

For the historic property where FTA has made a Section 4(f) non-*de minimis* use determination (i.e., the historic Kenilworth Lagoon/Grand Rounds Historic District), this section includes a “no prudent and feasible alternative? determination,” an assessment of all possible planning to minimize harm, and a least overall harm analysis.

As noted earlier, Section 4(f) applies to historic sites of national, state, or local significance in public or private ownership regardless of whether they are open to the public that are listed in, or eligible for, the NRHP. NRHP eligibility criteria are defined as follows:

- Criterion A—association with events that have made a significant contribution to broad patterns of history
- Criterion B—association with the life of a historically significant person
- Criterion C—embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction
- Criterion D—has yielded, or is likely to yield, information important in history or prehistory (this generally is understood to refer to archeological significance)

6.6.2.1 Hopkins City Hall – No Use

A. Property Description

Hopkins City Hall is located at 1010 1st Street in Hopkins. Hopkins City Hall is eligible for the NRHP under NRHP Criterion A. For more detailed information on this historic property, see Draft EIS Appendix H.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Hopkins City Hall historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Hopkins City Hall historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Hopkins City Hall historic property (see the Section 106 consultation documentation in Appendix H, I, and N of this Final EIS). No work is proposed in the immediate vicinity of the Hopkins City Hall; however, it is located within 0.25 mile radius of the Downtown Hopkins Station.

Based on the Section 106 finding of No Adverse Effect, FTA determined the Hopkins City Hall historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Hopkins City Hall historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Hopkins City Hall historic property.

6.6.2.2 Hopkins Commercial Historic District – No Use

A. Property Description

The Hopkins Downtown Commercial Historic District is located along Mainstreet between 8th Avenue and 11th Avenue in Hopkins. The Hopkins Downtown Commercial Historic District is eligible for the NRHP under NRHP Criterion A. For more detailed information on this historic property, see Final EIS Appendix H.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Hopkins Downtown Commercial Historic District historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Hopkins Commercial Historic District historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Hopkins Commercial Historic District historic property (see the Section 106 consultation documentation in Appendix H, I, and N of this Final EIS).

Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Hopkins Downtown Commercial Historic District historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Hopkins Commercial Historic District historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Hopkins Commercial Historic District historic property.

6.6.2.3 Minneapolis & St. Louis Railway Depot – No Use**A. Property Description**

The Minneapolis & St. Paul Railway Depot is located at 9451 Excelsior Boulevard in Hopkins. The depot is eligible for the NRHP under NRHP Criterion A.

B. Determination of Permanent Section 4(f) Use

The Project will not result in a permanent incorporation of property from the Minneapolis & St. Louis Railway Depot historic property.

C. Determination of Temporary Section 4(f) Use

The Project will not result in a temporary occupancy of the Minneapolis & St. Louis Railway Depot historic property.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the Minneapolis & St. Louis Railway Depot historic property (see the Section 106 consultation documentation in Appendix H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Minneapolis & St. Louis Railway Depot historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Minneapolis & St. Louis Railway Depot historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Minneapolis & St. Louis Railway Depot historic property.

6.6.2.4 Chicago, Milwaukee, St. Paul, & Pacific Railroad Depot – No Use**A. Property Description**

The Chicago, Milwaukee, St. Paul, & Pacific Railroad Depot at 6210 West 37th Street in St. Louis Park, inside Jorvig Park, and is listed on the NRHP based on NRHP Criterion A. The depot was moved from the intersection of Wooddale and 36th Street on Alabama Avenue, where it sat next to the railroad tracks. The depot served the Milwaukee Road from 1887 to 1968 and now serves as a museum for the St. Louis Park Historical Society. For more detailed information on this historic property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Chicago, Milwaukee, St. Paul, & Pacific Railroad Depot – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Chicago, Milwaukee, St. Paul, & Pacific Railroad Depot during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of Adverse Effect has been made with respect to Project impacts at the Chicago, Milwaukee, St. Paul, & Pacific Railroad Depot. In summary, the Project would potentially alter the setting of the depot through the introduction of a noise wall between the depot and the proposed light rail line that will introduce a new visual element and sever the direct visual connection between the depot and the existing adjacent freight railroad tracks. However, that impact to the depot's setting would not be to a degree that would affect the depot's eligibility for the NRHP. The Final Section 106 MOA includes measures that will be incorporated into the Project to resolve the Project's Adverse Effect on the depot (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS for additional detail). Based on the Section 106 finding of Adverse Effect and the measures to resolve the Adverse Effect included in the Section 106 MOA, FTA has concluded that the Chicago, Milwaukee, St. Paul, & Pacific Railroad Depot historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Chicago, Milwaukee, St. Paul, & Pacific Railroad Depot under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Chicago, Milwaukee, St. Paul, & Pacific Railroad Depot historic property.

6.6.2.5 Peavey-Haglin Experimental Concrete Grain Elevator – No Use**A. Property Description**

The Peavey-Haglin Experimental Concrete Grain Elevator is at the junction of Highway 100 and Highway 7 in St. Louis Park. It is listed on the NRHP based on NRHP Criterion C and is a national historical landmark. For more detailed information on this historic property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Peavey-Haglin Experimental Concrete Grain Elevator historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Peavey-Haglin Experimental Concrete Grain Elevator historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the Peavey-Haglin Experimental Concrete Grain Elevator historic property (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Peavey-Haglin Experimental Concrete Grain Elevator historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Peavey-Haglin Experimental Concrete Grain Elevator historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Peavey-Haglin Experimental Concrete Grain Elevator historic property.

6.6.2.6 Hoffman Callan Building – No Use**A. Property Description**

The Hoffman Callan Building, located at 3907 Highway 7 in St. Louis Park, is eligible for the NRHP under Criterion C. For more detailed information on this historic property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Hoffman Callan Building historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Hoffman Callan Building historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the Hoffman Callan Building historic property (see the Section 106 consultation documentation in Appendix H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Hoffman Callan Building historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 Part CFR 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Hoffman Callan Building historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Hoffman Callan Building historic property.

6.6.2.7 Minikahda Club – Temporary Occupancy Exception/No Section 4(f) Use**A. Property Description**

The Minikahda Club, located at 3205 Excelsior Boulevard in Minneapolis, is eligible for the NRHP under Criterion C. For more detailed information on this historic property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

The Project will not result in a permanent incorporation of land from the Minikahda Club historic property.

C. Determination of Temporary Section 4(f) Use

The Project will require a minor temporary occupancy of land at the very northern edge of the property in the landscaped triangle at the driveway entrance to the club. A part of this landscaped grass area will need to be closed while the intersection of Excelsior Boulevard and W. 32nd Street is repaved and restriped (both travel lane markings and crosswalk markings—see Exhibit 6.6-21). Section 4(f) temporary occupancy exception criteria are assessed below with respect to the construction impacts at the Minikahda Club historic property:

Section 4(f) temporary occupancy exception criteria are assessed below:

1. **Criterion:** *Duration is temporary (that is, the occupancy is shorter than the time needed for construction of the project, and there is no change in ownership of the property).*

Finding: The overall duration of construction for the entire project is approximately four years. The duration of the construction activities for the portion of the project at the Minikahda Club property is estimated at less than one month. There will be no change in ownership of the parkland that will be temporarily occupied.

2. **Criterion:** *Scope of work is minor (that is, the nature and magnitude of the changes to the Section 4(f) properties are minimal).*

Finding: The part of the Minikahda Club property to be temporarily occupied during construction is the grass-only part of the triangle median that sits between the entrance and exit driveway lanes of the club. The club will still be accessible to the public throughout construction for vehicles, bicycles, and pedestrians via the main driveway at the intersection of Excelsior Boulevard and West 32nd Avenue. There will be no permanent change to the Minikahda Club as a result of project activities.

3. **Criterion:** *There are no anticipated permanent adverse physical impacts or permanent interference with the protected activities, features, or attributes of the property.*

Finding: FTA and the MnHPO have determined that the Minikahda Club is eligible for the NRHP based on its landscape architecture. The project will not alter, either temporarily or permanently, the landscaping of the Minikahda Club. Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the Minikahda Club (see the Section 106 consultation documentation in Appendix C, Appendix F, and Appendix H of this Final EIS).

4. **Criterion:** *The property is restored to the same or better condition that existed prior to the project.*

Finding: The aforementioned grass part of the driveway triangle that will be temporarily occupied during construction will be restored to better conditions than exist currently.

5. **Criterion:** *There is documented agreement from the appropriate federal, state, or local officials having jurisdiction over the property regarding the above conditions.*

Finding: FTA and Council staff have consulted with MnHPO through the Section 106 process to review the project's construction plan in the vicinity of the Minikahda Club. MnHPO has concurred in writing that the above temporary occupation exception criteria are met by the Project (see Appendix I).

D. Determination of Constructive Section 4(f) Use

Based on the above discussion and Section 106 finding of No Adverse Effect, FTA has concluded that the Minikahda Club historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

EXHIBIT 6.6-21

Final Section 4(f) Evaluation – Minikahda Club



E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent Section 4(f) use of the Minikahda Club and that proposed construction activities within the park will meet the criteria for a Temporary Occupancy Exception described in 23 CFR Part 774.13(d).

6.6.2.8 Lake Calhoun – No Use**A. Property Description**

Lake Calhoun, located in Minneapolis, is a contributing element within the NRHP-eligible Grand Rounds Historic District based on NRHP Criteria A and C. For more detailed information on this historic property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

The Project will not result in a permanent incorporation of land from the Lake Calhoun historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Lake Calhoun historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Lake Calhoun (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect and the requirements under 23 CFR Part 774.15(f)(1), FTA has concluded that the Lake Calhoun historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur.

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Lake Calhoun historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Lake Calhoun historic property.

6.6.2.9 Lake of the Isles – No Use**A. Property Description**

Lake of the Isles, located in Minneapolis, is a contributing element within the NRHP-eligible Grand Rounds Historic District, which qualifies under Criterion C. For more detailed information on this historic property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Lake of the Isles historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Lake of the Isles historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Lake of the Isles historic property. Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Lake of the Isles historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Lake of the Isles historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Lake of the Isles historic property.

6.6.2.10 Lake of the Isles Parkway – No Use**A. Property Description**

Lake of the Isles Parkway, located in Minneapolis, is considered a contributing site within the overall potential Grand Rounds Historic District, which qualifies under Criterion A and Criterion C. For more detailed information on this historic property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Lake of the Isles Parkway historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Lake of the Isles Parkway historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Lake of the Isles Parkway historic property (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Lake of the Isles Parkway historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Lake of the Isles Parkway historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Lake of the Isles Parkway historic property.

6.6.2.11 Park Bridge No. 4/Bridge L5729 – No Use**A. Property Description**

Park Bridge No. 4/Bridge L5729, which spans the Kenilworth Lagoon along West Lake of the Isles Parkway, is considered a contributing site within the overall potential Grand Rounds Historic District and has been individually determined eligible for the NRHP under Criterion C. For more detailed information on this historic property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Park Bridge No. 4/Bridge L5729 historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Park Bridge No. 4/Bridge L5729 historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Park Bridge No.

4/Bridge L5729 (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Park Bridge No. 4/Bridge L5729 historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Park Bridge No. 4/Bridge L5729 historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Park Bridge No. 4/Bridge L5729 historic property.

6.6.2.12 Lake of the Isles Residential Historic District – No Use

A. Property Description

Lake of the Isles Residential Historic District, located in the vicinity of East and West Lake of the Isles parkways in Minneapolis, is considered a contributing site within the overall potential Grand Rounds Historic District and is eligible for the NRHP under Criterion A. For more detailed information on this historic property, see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Lake of the Isles Residential Historic District – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Lake of the Isles Residential Historic District during construction.

D. Determination of Constructive Section 4(f) Use

Based on Section 106 analysis and continued consultation with MnHPO a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the Lake of the Isles Residential Historic District historic property (see the Section 106 consultation documentation in Appendix H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Lake of the Isles Residential Historic District will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Park Bridge #4 historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Park Bridge #4 historic property.

6.6.2.13 Cedar Lake Parkway/Grand Rounds Historic District – Temporary Occupancy Exception/No Section 4(f) Use

A. Property Description

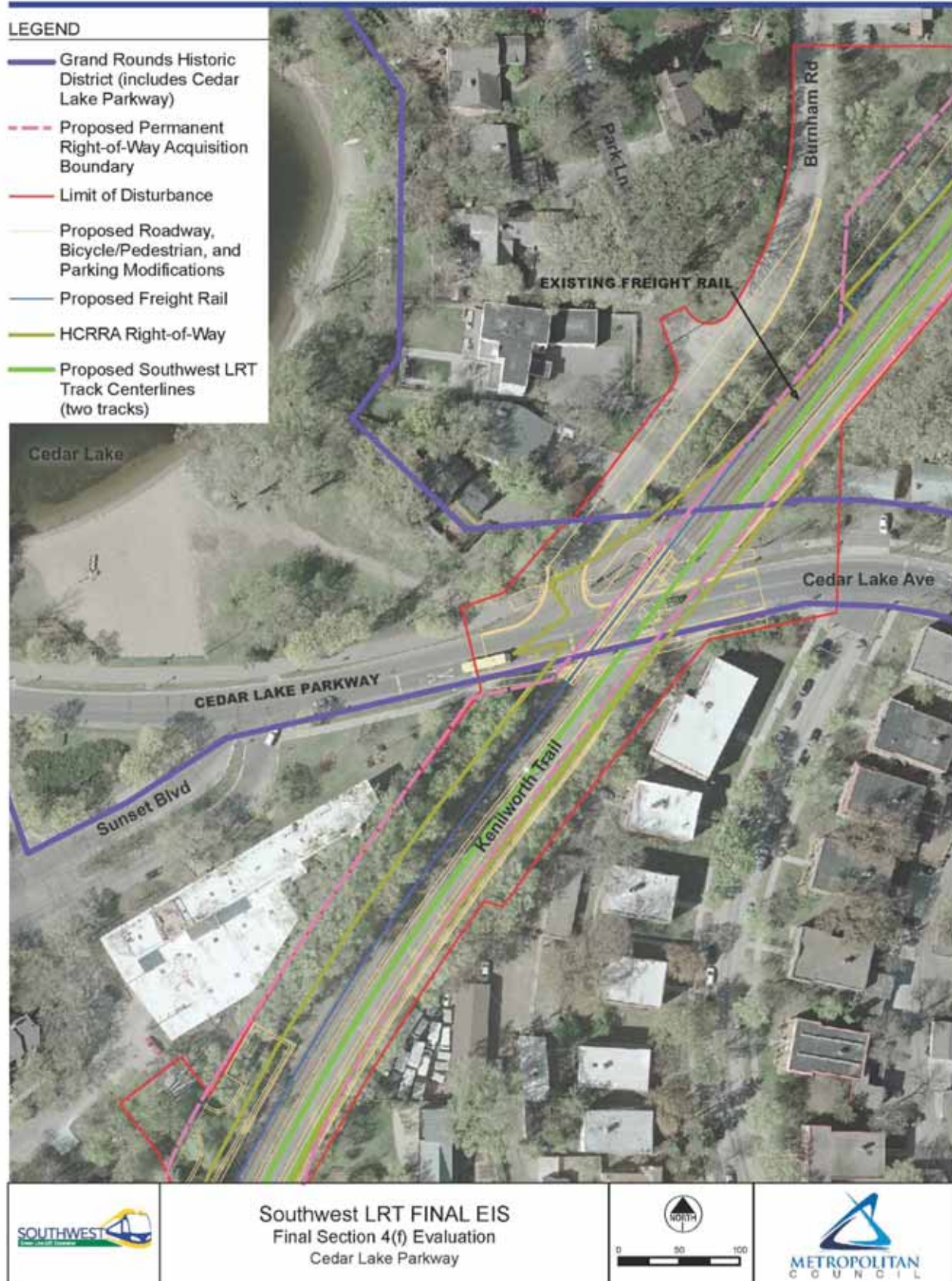
Cedar Lake Parkway, located in Minneapolis, is a contributing site within the overall potential Grand Rounds Historic District, which FTA and the MnHPO have determined to be eligible for the NRHP under Criterion A and Criterion C. For more detailed information on this historic property, see Appendix H of this Final EIS and Draft EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans and Exhibit 6.6-22, the Project will not result in a permanent incorporation of land from the Cedar Lake Parkway historic property – as such, there will not be a Section 4(f) permanent use of the property. Based on the Project design and consultation with MnHPO and other consulting parties, a Section 106 finding of No Adverse Effect has been made with respect

EXHIBIT 6.6-22

Final Section 4(f) Evaluation – Cedar Lake Parkway



to the Project at Cedar Lake Parkway (see the Section 106 consultation documentation in Appendix H, I, and N of this Final EIS).

C. Determination of Temporary Occupancy Exception

As illustrated in the Southwest LRT preliminary engineering plans and Exhibit 6.6-22, the Project will result in the temporary use of property from the Cedar Lake Parkway historic property during construction. Section 4(f) temporary occupancy exception criteria are addressed below:

1. **Criterion:** *Duration is temporary (that is, the occupancy is shorter than the time needed for construction of the project, and there is no change in ownership of the property).*

Finding: The overall duration of construction for the entire project is approximately four years. The duration of the construction activities for the portion in Cedar Lake Parkway is estimated at 18 months. There will be no change in ownership of the historic property that will be temporarily occupied.

2. **Criterion:** *Scope of work is minor (that is, the nature and magnitude of the changes to the Section 4(f) properties are minimal).*

3. **Finding:** The proposed light rail alignment will pass under Cedar Lake Parkway in a shallow tunnel, requiring the reconstruction of approximately 320 feet of the parkway (which is approximately 1.1 miles in length) to accommodate tunnel construction. The parkway will be reconstructed to its existing width and configuration as it crosses the corridor over the light rail tunnel, with a slight increase in elevation (less than approximately eight inches). The current at-grade intersections of the parkway with the recreational trail and with the freight rail tracks will continue, with the freight rail tracks shifting approximately three feet to the west. A new bicycle and pedestrian crossing signal will be added to the path's crossing of the parkway. The MnHPO concurred with the Section 106 finding of no adverse effect for the Cedar Lake Parkway and, based on the current design and the Section 106 finding of no adverse effect, the resource will be returned to current conditions or better.

4. **Criterion:** *There are no anticipated permanent adverse physical impacts or permanent interference with the protected activities, features, or attributes of the property.*

Finding: No permanent adverse impacts to the Cedar Lake Parkway historic property are anticipated because of Project actions. During construction activities that will require the closure of Cedar Lake Parkway, the project will provide signed detour routes for vehicles, pedestrians, and bicyclists. Notification of the detours will be provided to the public through various media, consistent with the project's construction management plan.

5. **Criterion:** *The property is restored to the same or better condition that existed prior to the project.*

Finding: As noted under Criterion 2, Cedar Lake Parkway will be reconstructed to its existing width and configuration as it crosses the corridor over the LRT tunnel, with a slight increase in elevation (less than eight inches). The current at-grade intersections of the parkway with the recreational trail and freight rail tracks will continue, with the freight rail tracks shifting approximately three feet to the west. The MnHPO concurred with the Section 106 finding of no adverse effect for the Cedar Lake Parkway and, based on the current design and the Section 106 finding of no adverse effect, the resource will be returned to current conditions or better.

6. **Criterion:** *There is documented agreement from the appropriate federal, state, or local officials having jurisdiction over the property regarding the above conditions.*

Finding: FTA and Council staff have consulted with MnHPO through the Section 106 process to review the project's impacts to Cedar Lake Parkway. MnHPO has concurred in writing that the above temporary occupation exception criteria are met by the Project (see Appendix I).

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Cedar Lake

Parkway (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Cedar Lake Parkway historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent Section 4(f) use of the Cedar Lake Parkway historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Cedar Lake Parkway historic property. Further, FTA has determined that the construction activities that will occur within the Cedar Lake Parkway will meet the criteria for a Temporary Occupancy Exception described in 23 CFR Part 774.13(d).

6.6.2.14 Cedar Lake – No Use

With regard to a discussion of potential Section 4(f) impacts to the Cedar Lake historic property it is important to note that the boundary of this historic property is not coincident with the boundary of the Cedar Lake Park recreation property. Because the historic and recreation property boundaries are different, they are treated as two distinct Section 4(f) properties within this evaluation and the anticipated uses and impacts to the two properties are not the same. For more detailed information on this historic property, see Appendix H of this Final EIS.

A. Property Description

FTA and MnHPO have determined that Cedar Lake is eligible for listing in the National Register under Criteria A and C. Cedar Lake is a contributing site within the overall potential Grand Rounds Historic District.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Cedar Lake historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from Cedar Lake historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Cedar Lake (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Cedar Lake historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Cedar Lake historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Cedar Lake Park historic property.

6.6.2.15 Kenilworth Lagoon/Grand Rounds Historic District – non-De Minimis Use

This section provides the following for the Kenilworth Lagoon²¹/Grand Rounds Historic District:

- A property description;
- A summary of FTA's and the Council's avoidance alternatives analysis and determinations;
- A summary of all possible planning to minimize harm and FTA's and the Council's determination; and,
- A summary of FTA's and the Council's least overall harm analysis and determinations.

A. Property Description

The Kenilworth Lagoon is a constructed body of water that connects Cedar Lake and Lake of the Isles in Minneapolis, as shown on Exhibit 3.5-2. The Kenilworth Lagoon is a contributing element of the Grand Rounds Historic District, which is eligible for listing in the *National Register of Historic Places* based on Criteria A and C.²² The boundary of the Grand Rounds Historic District within the project vicinity, including the Kenilworth Lagoon, is illustrated on Exhibit 3.5-3.

Documentation of the Kenilworth Lagoon's and the Grand Rounds Historic District's determination of eligibility is provided in Appendix H. See the *Kenilworth Lagoon/Channel Context, History, and Physical Description for the Proposed Southwest LRT Project* (Mathis, 2014) for additional documentation on the Kenilworth Lagoon. Following is an excerpt from that report that describes the creation of the Grand Rounds (ibid. pages 2-3).

"In 1883, a series of events occurred that were critical to the creation of the present-day park system in Minneapolis. The first occurred in February, when the Minnesota Legislature approved enabling legislation for the creation of an independent park board. The second was in April, when Minneapolis voters approved a referendum, the Park Act, to establish an independent board of park commissioners to oversee the development of parks in the city. The Minneapolis Board of Park Commissioners (MBPC) was authorized to obtain land for park development, issue bonds to pay for land acquisition and park development, and to levy a citywide tax to repay the bonds (MPRB, 2014a). Another major event occurred shortly thereafter, when noted landscape architect Horace William Shaler (H.W.S.) Cleveland came to Minneapolis and presented his "Suggestions for a System of Parks and Parkways for the City of Minneapolis" (Roise et al., 2012a). Cleveland's vision called for the creation of an interconnected park system that featured a system of landscaped parkways to link the Mississippi River, Minnehaha Falls, Minnehaha Creek, and the numerous lakes in the City (Cleveland 1883).

"Enamored with Cleveland's vision, the MBPC set about with its implementation... In 1887, the MBPC began to develop the Chain of Lakes. In 1890, the MBPC established a Special Committee on Park Engagement. This committee looked at the park system, as developed along Cleveland's ideas, and in 1891 made recommendations for expanding the system throughout the city. It was at this time that the phrase "Grand Rounds" was first used to describe a parkway system that will form a loop around the entire city and pass through several large parks. The proposal was thoroughly endorsed by the MBPC, who continued to support it through the 1890s. However, aggressive implementation did not move forward until 1906, when Theodore Wirth became the new superintendent of Minneapolis parks. During

²¹ Kenilworth Lagoon, which is a constructed channel connecting Lake of the Isles to Cedar Lake, is made up of two distinct components: a narrow channel with segments of retaining walls within its banks (between the Kenilworth Corridor and Cedar Lake); and the wide lagoon that typically has gently sloping and landscaped banks (between the Kenilworth Corridor and Lake of the Isles).

²² FTA, MnHPO, and the Council have also identified the Kenilworth Channel/Lagoon as a Section 4(f) park and recreation property, as part of the Grand Rounds Regional Park, similar to but distinct from the Kenilworth Lagoon as an individual historic property and a contributing element of the Grand Rounds Historic District. The historic and park properties are treated separately within this draft Section 4(f) Evaluation Update as they have somewhat different boundaries, different Section 4(f) qualifying characteristics, and different officials with jurisdiction. See Section 6.6.1.12 for the updated Section 4(f) analysis for the Kenilworth Channel/Lagoon park and recreation property.

Wirth's 30-year tenure, the Minneapolis parks system nearly tripled in size, growing from 1,800 acres to around 5,200 acres (Roise et al., 2012a).

"The modern-day Grand Rounds is an approximately 50-mile long, interconnected system of parks and parkways that encircles most of Minneapolis. Encompassing approximately 4,662 acres, small portions of the system also extend into the adjacent cities of Golden Valley, Robbinsdale, Saint Anthony, and Saint Louis Park. The Grand Rounds is organized into seven segments: Kenwood, Chain of Lakes, Minnehaha, Mississippi River, Northeast, Victory Memorial, and Theodore Wirth. Each segment is further divided into sub-segments that include parkways, boulevards, and the parks they connect (Roise et al., 2012a).

"The Chain of Lakes encompasses the major lakes within the Grand Rounds system. It extends from the parkway bridge over Interstate 394 to the start of Minnehaha Parkway on the southeast side of Lake Harriet. The Chain of Lakes includes the following sub-segments: Cedar Lake, including Brownie Lake, Lake of the Isles, Dean Parkway, the Mall, Lake Calhoun, William Berry Park, originally Interlachen Park, Linden Hills Boulevard, Lake Harriet; Lyndale Park; Kings Highway, and Lyndale Farmstead (Roise et al., 2012a).

"The park system that evolved into the Grand Rounds has experienced several significant periods of development over the last 130 years. They include initial development following H.W.S. Cleveland's recommendations; the early 1890s, when the vision for the system was expanded and it became known as the Grand Rounds; the Theodore Wirth period between 1906 and 1935, when the system was greatly expanded and improved; the 1970s when a substantial reworking of the system occurred following the recommendations of San Francisco landscape architects Eckbo, Dean, Austin and Williams, as modified by the Citizen Parkway Committee, and implemented by the landscape architecture firm InterDesign and the engineering firm BRW; and finally after 1998, when the Grand Rounds was designated by the Federal Highway Administration as the first urban National Scenic Byway and new layer of signage and other elements were installed (Roise et al. 2012a).

Connecting the Chain of Lakes was one of the most important improvements undertaken by the MBPC in the early period of Theodore Wirth's tenure. By the early twentieth century, there was widespread interest in water sports on the lakes and streams in Minneapolis, which resulted in a strong public desire to create a continuous navigable waterway to connect the Chain of Lakes. Construction of the Kenilworth Lagoon (EH-MPC-01822) was part of the major effort between 1907 and 1931 to make improvements to the Lake District in western Minneapolis, which included substantial dredging operations. This dredging work commenced at Lake of the Isles and dredging work to create the Kenilworth Lagoon was substantially completed in November 1912. The following year the MPRB adopted the name "Kenilworth" for the lagoon. In 1913, the Minneapolis and Saint Louis Railway Company constructed what was characterized at the time as a "temporary" wood timbered bridge across the lagoon. Work on the lagoon continued into the fall of 2013, including the grading and planting of the banks between Cedar Lake and the railroad bridge. Walks were planted along both sides of the lagoon leading from Lake of the Isles Boulevard to Cedar Lake Avenue, which had its name changed to Burnham Avenue. The waterway officially opened on November 8, 1913. In 1938, WPA crews stopped erosion of the banks by constructing approximately 2,400 cubic feet of retaining wall. In 1961, the MPRB completed the replacement of the timber retaining wall on the north side of the west end of the lagoon running from Cedar Lake to the Burnham Road Bridge.

The existing freight rail and bicycle/pedestrian bridges crossing the Kenilworth Lagoon are known collectively as Bridge No. 5 in the Section 106 documentation (the bridges are also collectively known as Bridge 27A43). The two bridges are seven-span creosoted timber trestles that historically carried two Minneapolis and St. Louis Railway siding tracks that were part of the railroad's Cedar Lake Yard. The bridges were originally built in 1913 and replaced in the 1950s. FTA and MnHPO have determined that neither of the two existing timber trestles that make up Bridge No. 5 are contributing elements to the Kenilworth Lagoon or Grand Rounds Historic District and they are not eligible for listing in the *National Register of Historic Places*.

Exhibits 6.6-23 through 6.6-27 illustrate existing conditions of the Kenilworth Lagoon at the BNSF/HCRRA rights-of-way, including the existing non-contributing wood trestle bridges.

Because the area of the Kenilworth Lagoon that will be used by the Project is identical to the area of the Grand Rounds Historic District that will be used by the Project, and because the Kenilworth Lagoon is a contributing element of the Grand Rounds Historic District, this Section 4(f) non-*de minimis* use determination applies to both the Kenilworth Lagoon and the Grand Rounds Historic District. Throughout the remainder of this section, the two historic properties are collectively referred to as the Kenilworth Lagoon/Grand Rounds Historic District (as the Section 4(f) property under review).

B. Determination of Permanent Section 4(f) Use

The Project will result in the permanent incorporation of approximately 0.4 acres of property from the historic Kenilworth Lagoon/Grand Rounds Historic District (see Exhibit 6.6-24). At the Kenilworth Lagoon, the Project is based on the Shallow LRT Tunnel – Over Kenilworth Tunnel option that was developed and evaluated by the Council through the design adjustment process described in Section 2.3.3.2 and Appendix F of this Final EIS.

Based on the Section 106 analysis performed, FTA and the MnHPO have determined that the Project will result in an adverse effect on the Kenilworth Lagoon/Grand Rounds Historic District. The rationale for this effect determination is based on proposed changes to the historic property and its setting, including the following:

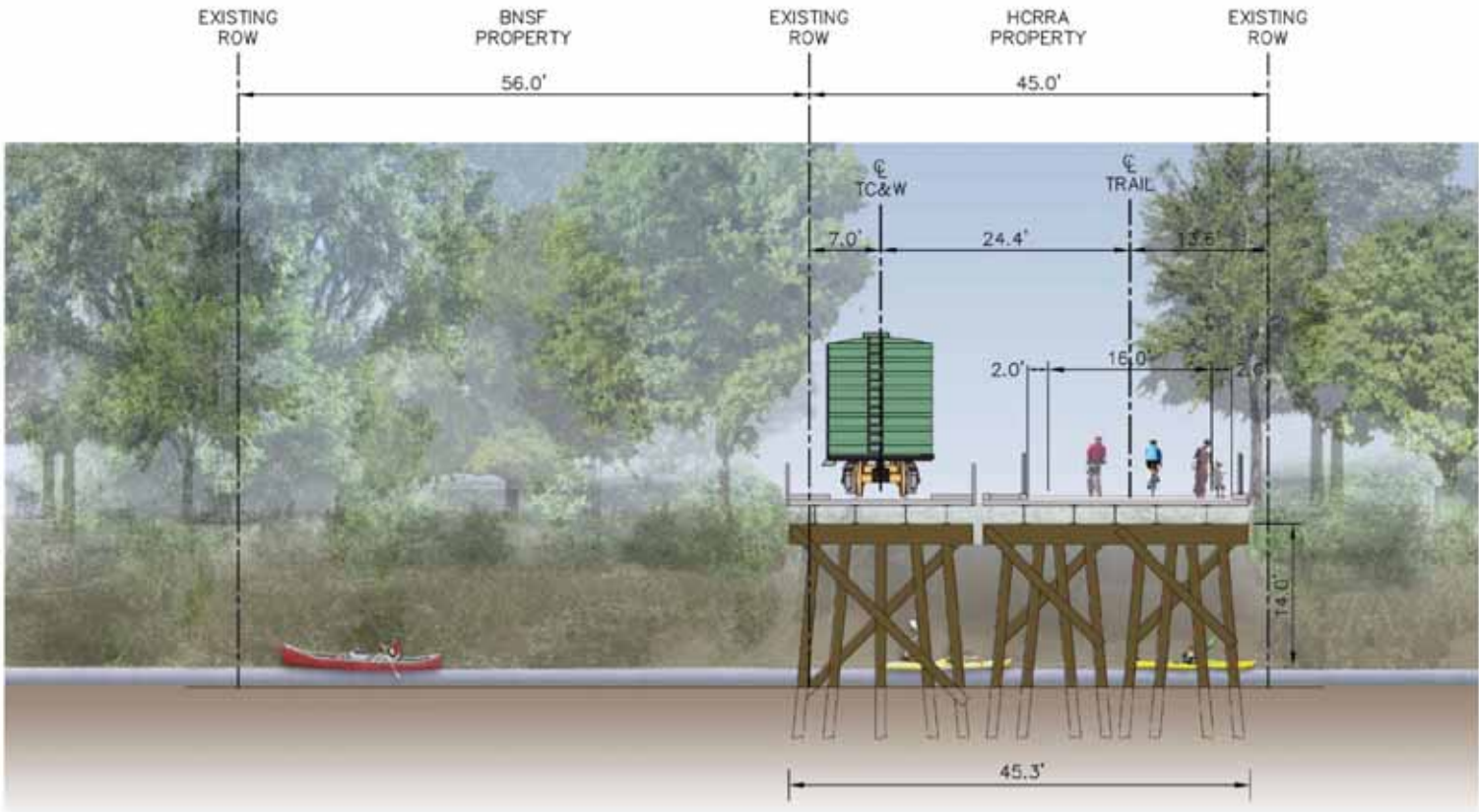
- Removal of the existing non-contributing railroad and trail bridges across the channel
- Replacement of the existing railroad and trail bridges with new light rail, freight rail, and trail bridges over the channel
- Impact of the width of the new crossing on the character and feeling of the middle section of the Kenilworth Lagoon and on the experience of using the waterway when passing under the new structure
- Design and visibility of the new bridge structures across the channel
- Visual impact from the width of the new crossing on the character and feeling of the middle section of the channel and on the experience of using the waterway when passing under the new structure
- Partial removal and/or alterations of contributing WPA-era retaining walls
- Removal and/or replacement of some existing vegetation on a portion of the channel banks and reconstruction of portions of the channel banks
- Reconstruction of portions of the lagoon banks

Exhibits 6.6-23 through 6.6-35 illustrate a variety of cross sections and simulations of the proposed bridge type, design, and railing treatments that were developed by project staff to help facilitate the Section 106 consultation process to minimize and mitigate adverse effects to the Kenilworth Lagoon/Grand Rounds Historic District. Other potential bridge plans, cross sections, and simulations were presented and discussed at the project's November 24, 2014, Section 106 Consultation Meeting to help initiate the project's coordination effort with the consulting parties on potential ways to resolve a Section 106 adverse effect on the historic property. The exhibits were used at the November 2014 meeting to initiate the avoidance, minimization, and mitigation process for the Kenilworth Lagoon/Grand Rounds Historic District. Continuing that process, additional draft designs, cross sections, and simulations of bridge span configurations and railing options were discussed during the project's February 6 and 24, 2015, June 17, 2015, July 29, 2015, and September 23, 2015, Section 106 Consultation Meetings. The Section 106 consultation process will conclude with the execution of the Project's Section 106 Memorandum of Agreement, which will be included in the Project's Record of Decision. In addition, design options to minimize or mitigate adverse effects to topographical features (vegetation and WPA-era retaining walls) are also included in the Memorandum of Agreement. The final Section 106 Memorandum of Agreement is provided in Appendix H of this Final EIS. The Section 106 Consultation Meeting materials are included in Appendix N.



Based on the information summarized in this section, FTA has concluded that the Project will result in a non-*de minimis* use of the historic Kenilworth Lagoon Section 4(f) resource.

EXHIBIT 6.6-23

Final Section 4(f) Evaluation – Kenilworth Lagoon/Grand Rounds Historic District Existing Conditions (looking north)



DRAFT - WORK IN PROCESS

	<p>Southwest LRT FINAL EIS Final Section 4(f) Evaluation Kenilworth Lagoon/Grand Rounds Historic District Existing Conditions (looking north)</p>		
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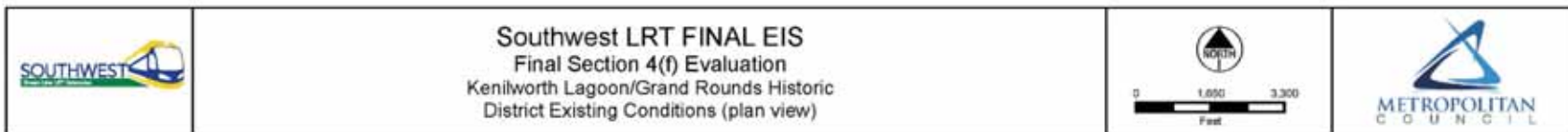
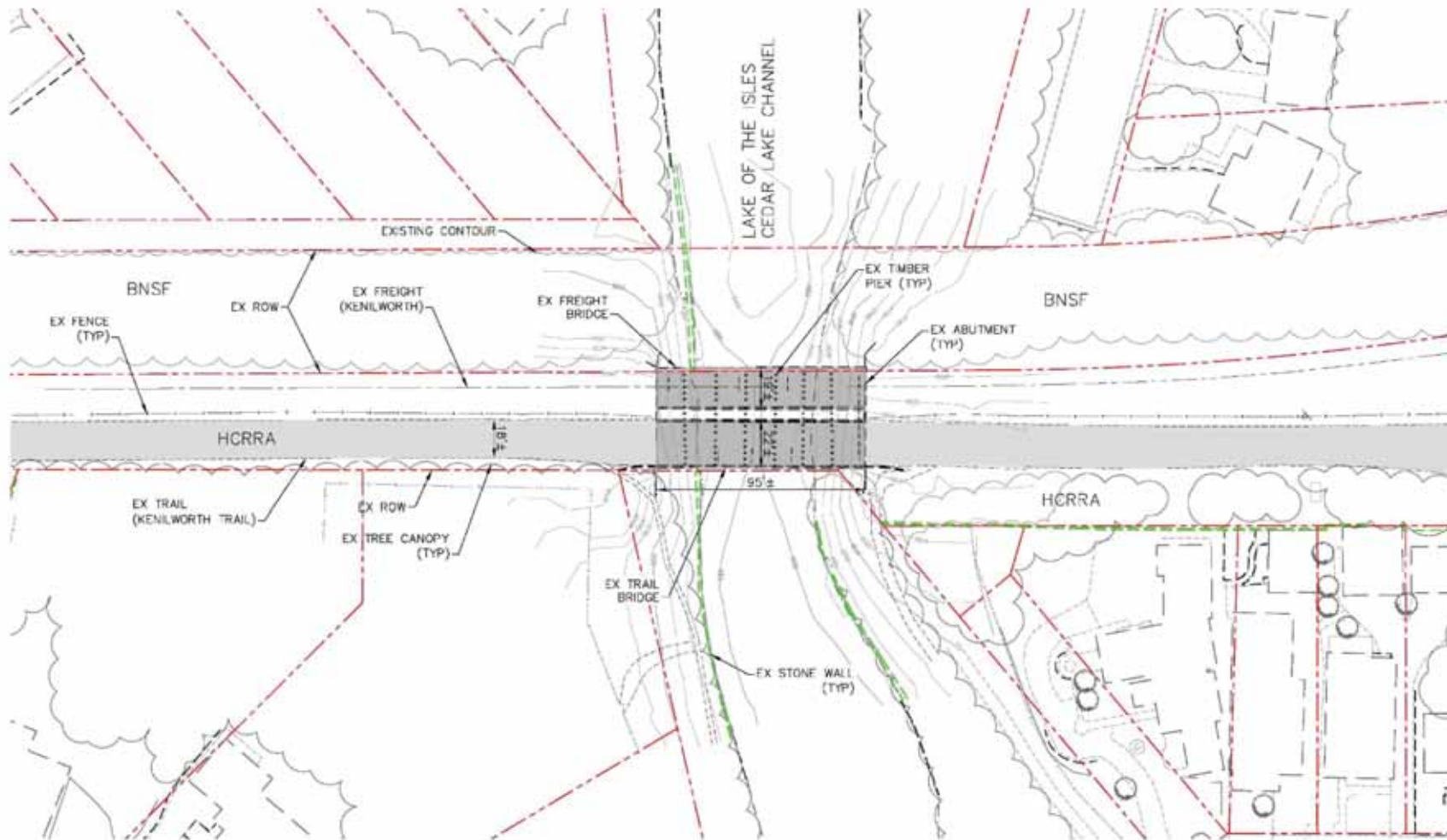
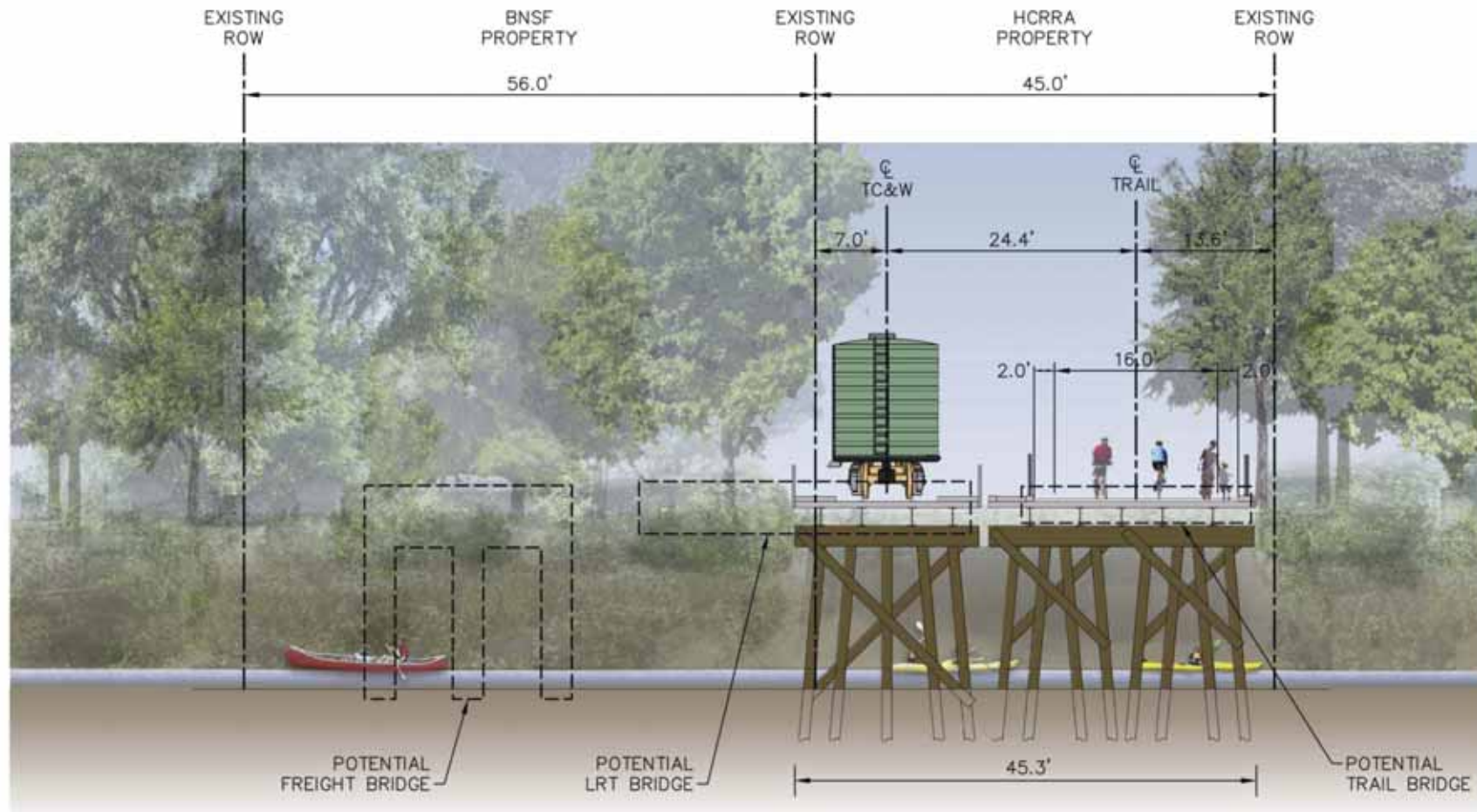


EXHIBIT 6.6-25

Final Section 4(f) Evaluation – Kenilworth Lagoon/Grand Rounds Historic District Existing Conditions (looking north – relative to proposed new bridges)

**DRAFT - WORK IN PROCESS**



	<p align="center">Southwest LRT FINAL EIS Final Section 4(f) Evaluation Kenilworth Lagoon/Grand Rounds Historic District Existing Conditions (looking north – relative to proposed new bridges)</p>	
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EXHIBIT 6.6-26

Final Section 4(f) Evaluation – Kenilworth Lagoon/Grand Rounds Historic District Existing Conditions (from water level)



DRAFT - WORK IN PROCESS



	<p>Southwest LRT FINAL EIS Final Section 4(f) Evaluation Kenilworth Lagoon/Grand Rounds Historic District Existing Conditions (from water level)</p>		
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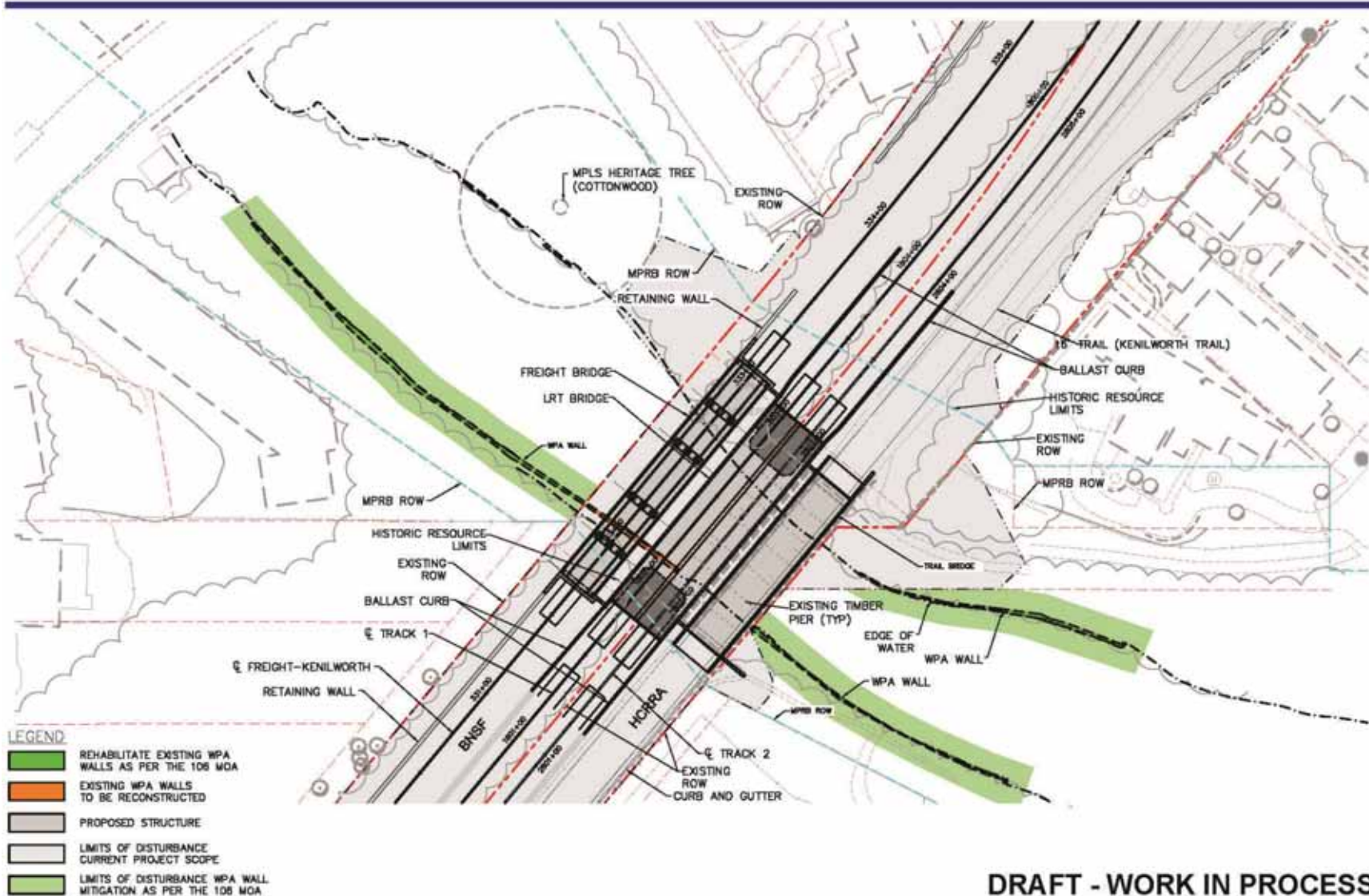
EXHIBIT 6.6-27



Final Section 4(f) Evaluation – Kenilworth Channel/Lagoon (element of the Grand Rounds Historic District)



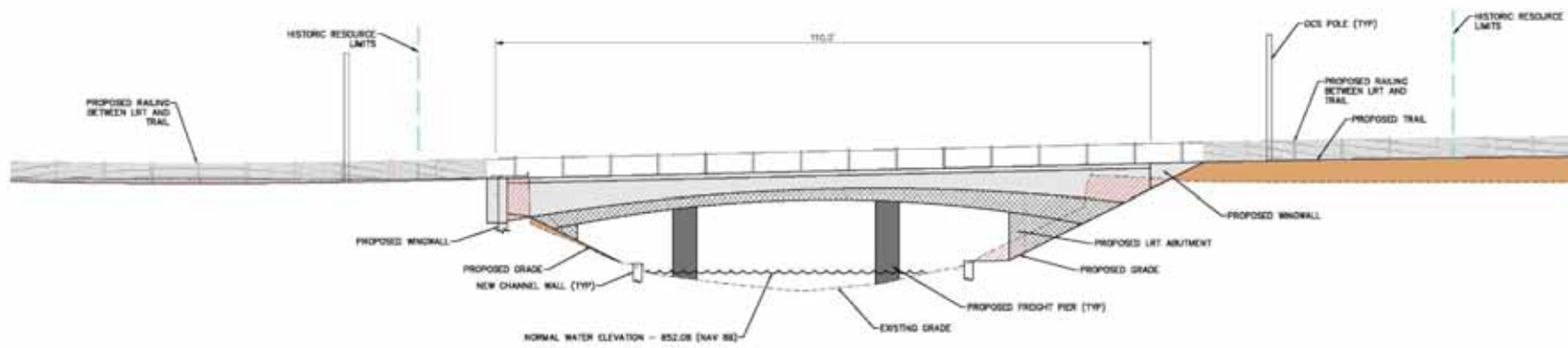
EXHIBIT 6.6-28

Final Section 4(f) Evaluation – Proposed Kenilworth Lagoon Freight Rail, Light Rail, and Trail Bridges – Plan View



	<p>Southwest LRT Final EIS Final Section 4(f) Evaluation Proposed Kenilworth Lagoon Freight Rail, Light Rail, And Trail Bridges Plan View</p>	
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Final Section 4(f) Evaluation – Proposed Kenilworth Lagoon Light Rail and Trail Bridges – Profile Views



COLOR LEGEND	
	EXISTING GROUND CUT
	PROPOSED FILL
	PROPOSED TRAIL BRIDGE
	PROPOSED LRT BRIDGE
	PROPOSED FREIGHT BRIDGE

PROFILE VIEW - LRT & FREIGHT BRIDGE SHOWN

DRAFT - WORK IN PROCESS



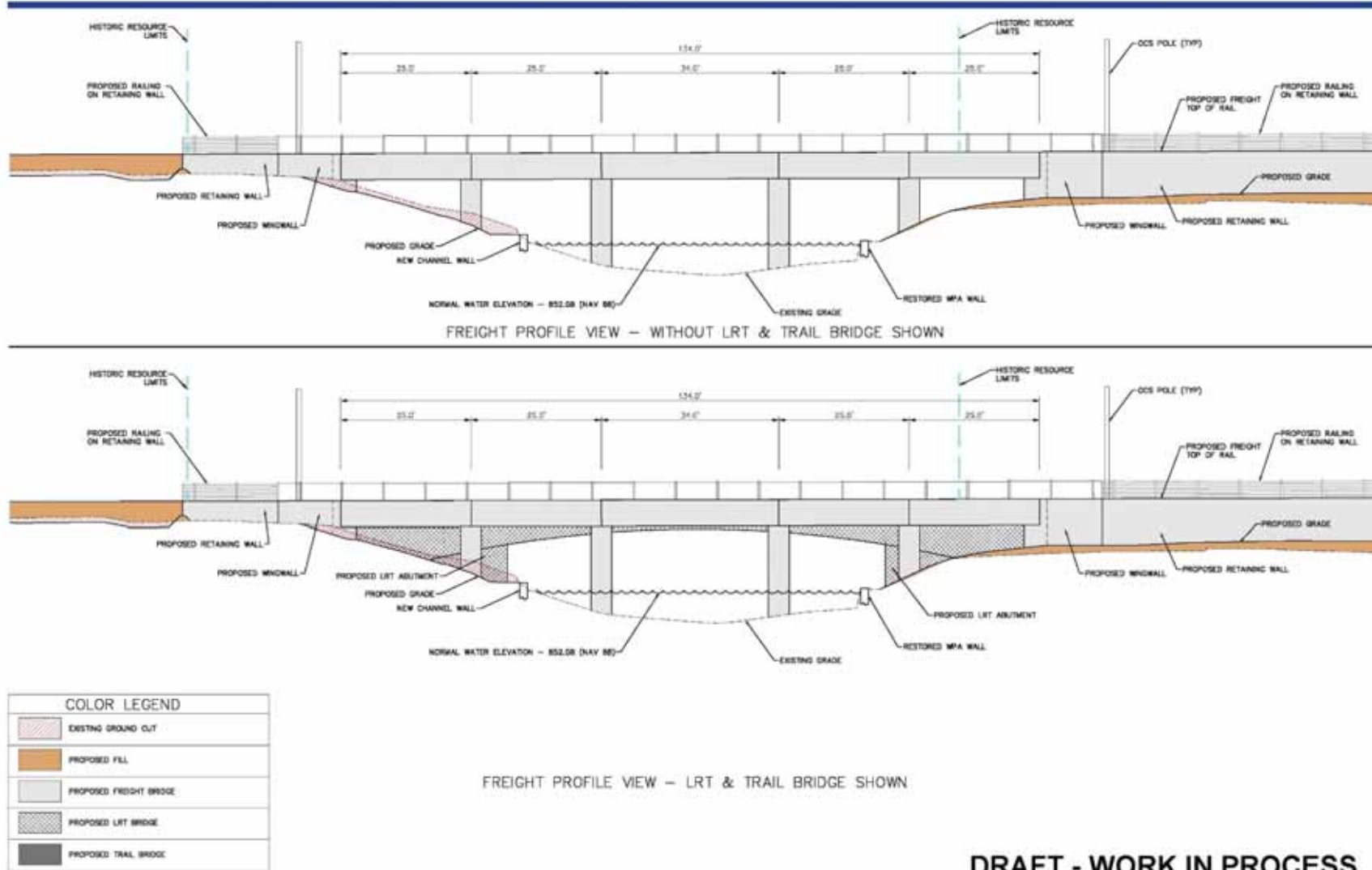
	<p style="text-align: center;"> Southwest LRT FINAL EIS Final Section 4(f) Evaluation Proposed Kenilworth Lagoon Light Rail and Trail Bridges – Profile Views </p>		
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EXHIBIT 6.6-30

Final Section 4(f) Evaluation – Proposed Kenilworth Lagoon Freight Rail Bridge – Profile Views

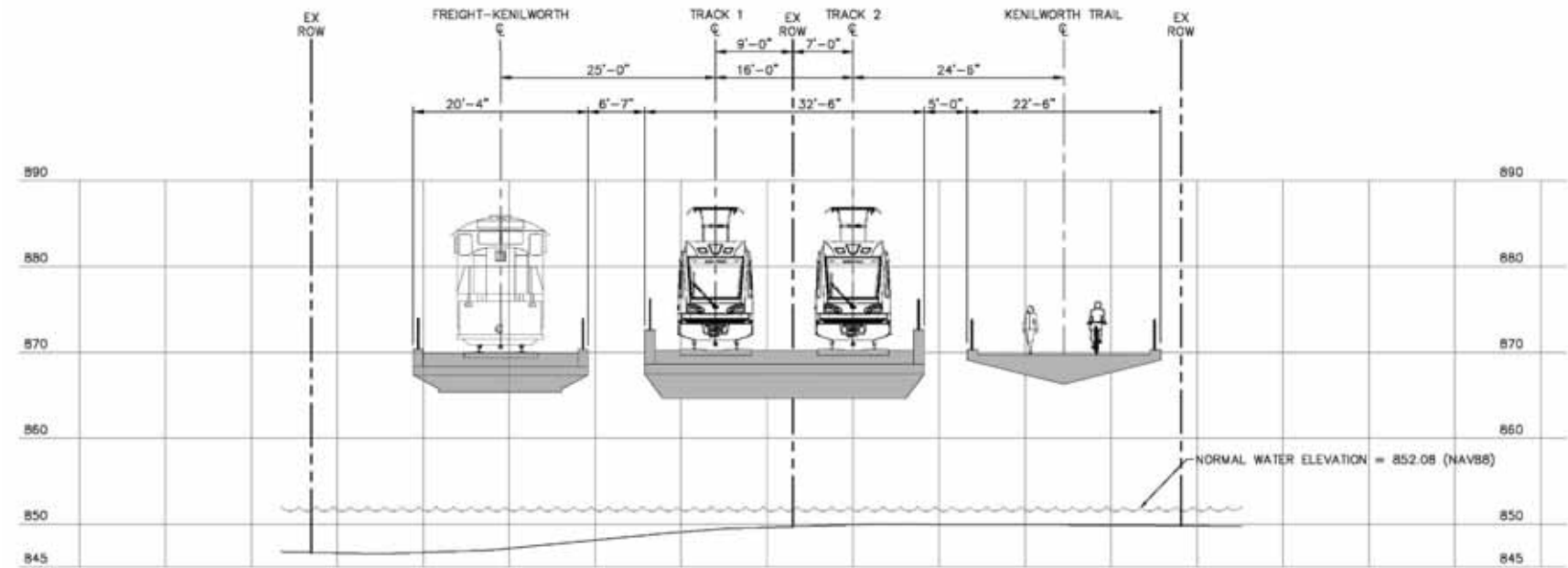
**DRAFT - WORK IN PROCESS**

Southwest LRT FINAL EIS
 Final Section 4(f) Evaluation
 Proposed Kenilworth Lagoon Freight Rail Bridge – Profile Views



EXHIBIT 6.6-31

Final Section 4(f) Evaluation – Proposed Kenilworth Lagoon Freight Rail, Light Rail, and Trail Bridges Cross Section At The Lagoon



COLOR LEGEND	
	EXISTING GROUND CUT
	PROPOSED FILL
	PROPOSED STRUCTURE

DRAFT - WORK IN PROCESS



	<p>Southwest LRT FINAL EIS Final Section 4(f) Evaluation Proposed Kenilworth Lagoon Freight Rail, Light Rail, And Trail Bridges Cross Section At The Lagoon</p>	
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EXHIBIT 6.6-32

Final Section 4(f) Evaluation – Kenilworth Lagoon/Grand Rounds Historic District under the Project Conditions (from water level) – View A



DRAFT - WORK IN PROCESS



	<p>Southwest LRT FINAL EIS</p> <p>Final Section 4(f) Evaluation</p> <p>Kenilworth Lagoon/Grand Rounds Historic District</p> <p>under the Project Conditions (from water level) - View A</p>		
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EXHIBIT 6.6-33

Final Section 4(f) Evaluation – Kenilworth Lagoon/Grand Rounds Historic District under the Project Conditions (from water level) – View B





	<p>Southwest LRT FINAL EIS Final Section 4(f) Evaluation Kenilworth Lagoon/Grand Rounds Historic District under the Project Conditions (from water level) - View B</p>		
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EXHIBIT 6.6-34

Final Section 4(f) Evaluation – Kenilworth Lagoon/Grand Rounds Historic District under the Project Conditions (from water level) – View C





EXHIBIT 6.6-35

Final Section 4(f) Evaluation – Kenilworth Lagoon/Grand Rounds Historic District under the Project Conditions (from water level) – View D



DRAFT - WORK IN PROCESS

	<p>Southwest LRT FINAL EIS Final Section 4(f) Evaluation Kenilworth Lagoon/Grand Rounds Historic District under the Project Conditions (from water level) - View D</p>		
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C. Avoidance Alternatives Analysis

The Section 4(f) statute requires the selection of an alternative that completely avoids the use of Section 4(f) property if that alternative is deemed feasible and prudent. Based on project analysis performed to-date, the No Build and Enhanced Bus Alternative as described and evaluated in the project Draft EIS will completely avoid the use of any Section 4(f) property. No other alternatives developed and evaluated would completely avoid the use of a Section 4(f) property. Following is a summary of FTA and the Council assessment of the feasibility and prudence of those two alternatives. In summary, the determination is that both the No Build Alternative and the Enhanced Bus Alternative are feasible but not prudent avoidance alternatives as per the criteria provided in 23 CFR Part 774.17 and described in Section 6.4.3 of this Final EIS.

D. No Build Alternative

The No Build Alternative is required by the NEPA/MEPA process and includes all existing and committed transportation infrastructure, facilities, and services contained in the region's fiscally constrained and federally approved transportation plan, the Metropolitan Council's Transportation Policy Plan (TPP).

As defined in Chapter 2 of this Final, the No Build Alternative will completely avoid a use of all Section 4(f) resources.

E. Evaluation of Feasibility

As per 23 CFR Part 774.17 of the Section 4(f) regulations, an alternative is not feasible if it cannot be built as a matter of sound engineering judgment. FTA and the Council have determined that the No Build Alternative will be feasible from an engineering perspective, because no construction will be required to implement the alternative.

F. Evaluation of Prudence

Section 6.4.3 lists the Section 4(f) criteria used by FTA to determine the prudence of a full avoidance alternative as per 23 CFR Part 774.17.

i. *Effectiveness in Meeting Purpose and Need*

The project's Purpose and Need is summarized in Chapter 1 of this Final EIS. In the Draft EIS, FTA and the Council concluded that, while the No Build Alternative will avoid potential disruption to neighborhoods, commercial districts, and historic areas in the corridor, the No Build Alternative will not adequately support the Purpose and Need of the project as expressed through the project's evaluation goal, objectives, criteria, and measures (see Section 11.2.1 of the Draft EIS). In summary, the No Build Alternative will be inconsistent with local and regional comprehensive plans, which include or are consistent with implementation of the Southwest LRT Project. Furthermore, the No Build Alternative will not improve mobility, provide a cost-effective efficient travel option, or support economic development and an economically competitive freight rail system, which are key elements of the project's Purpose and Need (see Chapter 1 of this Final EIS).

FTA and the Council have determined that the No Build Alternative will compromise the Project to a degree that, under the No Build Alternative, the stated Purpose and Need for the Project will not be met; therefore, the No Build Alternative does not constitute a prudent alternative that will fully avoid the use of Section 4(f) properties.

ii. *Safety and Operational Considerations*

- None.

iii. *Social, Economic, Environmental, and Community Impacts*

- None.

iv. *Cost*

- None.

v. *Unique Problems or Unusual Factors*

- None.

vi. Cumulative Consideration of Factors

- None.

Avoidance Alternative Determination: The No Build Alternative will avoid uses of all Section 4(f) resources, but it is deemed not prudent under the definition in 23 CFR Part 774.17. The No Build Alternative is not prudent per 23 CFR Part 774.17 because it neither addresses nor corrects the transportation purpose and need that prompted the proposed Project.

6.6.2.16 Enhanced Bus Alternative

The Enhanced Bus Alternative, carried forward into the Draft EIS from the SouthWest Transitway Alternatives Analysis and scoping, was refined with FTA input into the New Starts Baseline/Transportation System Management Alternative for the purpose of the New Starts project development process.²³ By definition, the Enhanced Bus Alternative is a low-capital cost alternative that will provide the best transit service to the corridor without a major capital investment. The Enhanced Bus Alternative included the same highway and roadway network improvements contained in the No Build Alternative. The Enhanced Bus Alternative did not include any modifications to the existing highway or roadway infrastructure in the project study area.

The Enhanced Bus Alternative will have included two new limited-stop bus routes providing bidirectional service between Eden Prairie and downtown Minneapolis, with stops in Minnetonka, Hopkins, and St. Louis Park. The alternative also included minor modifications to the existing express bus service along with increased service frequencies and restructured local service to provide access to stops along the new express routes.

As defined in Chapter 2 of the Draft EIS and summarized in Section 2 of this Final EIS, the Enhanced Bus Alternative will completely avoid the use of all Section 4(f) resources.

A. Evaluation of Feasibility

As per 23 CFR Part 774.17 of the Section 4(f) statute, an alternative is not feasible if it cannot be built as a matter of sound engineering judgment. FTA and the Council have determined that the Enhanced Bus Alternative could be built as a matter of sound engineering judgment and therefore it will be feasible from an engineering perspective.

B. Evaluation of Prudence

Section 6.4.3 of this Final EIS lists the Section 4(f) criteria used by FTA to determine the prudence of a full avoidance alternative as per 23 CFR Part 774.17.

i. Effectiveness in Meeting Purpose and Need

The project's Purpose and Need is summarized in Chapter 1 of this Final EIS. In the Draft EIS, FTA and the Council concluded that, while the Enhanced Bus Alternative will avoid potential disruption to neighborhoods, commercial districts, and historic areas in the corridor, the Enhanced Bus Alternative will not adequately support the project's Purpose and Need of the project as expressed through the project's evaluation goal, objectives, criteria, and measures (see Section 11.2.1 of the Draft EIS). In summary, the Enhanced Bus Alternative will be inconsistent with local and regional comprehensive plans, which include or are consistent with implementation of the Southwest LRT Project. The Enhanced Bus Alternative will only marginally improve mobility, and it will not provide an efficient travel option, or support economic development.

FTA and the Council have determined that the Enhanced Bus Alternative will compromise the project to a degree that, under the Enhanced Bus Alternative, the stated Purpose and Need for the project will not be met; therefore, the Enhanced Bus Alternative does not constitute a feasible and prudent alternative that will fully avoid the use of Section 4(f) properties.

²³ A baseline alternative is no longer required by FTA for their New Starts rating process.

- ii. *Safety and Operational Considerations*
 - None.
- iii. *Social, Economic, Environmental, and Community Impacts*
 - None.
- iv. *Cost*
 - None.
- v. *Unique Problems or Unusual Factors*
 - None.
- vi. *Cumulative Consideration of Factors*
 - None.

Avoidance Alternative Determination: The Enhanced Bus Alternative will avoid uses of all Section 4(f) resources, but it is deemed not prudent under the definition of in 23 CFR Part 774.17. The Enhanced Bus Alternative is not prudent per 23 CFR Part 774.17 because it neither addresses nor corrects the transportation purpose and need that prompted the proposed project.

C. All Possible Planning to Minimize Harm Analysis

In addition to a determination that there is no feasible and prudent alternative that avoids the use of a Section 4(f) resource, the Section 4(f) regulations also states that FTA may not approve the use of a Section 4(f) resource unless it determines that the proposed action includes all possible planning, as defined in 23 CFR Part 774.17, to minimize harm to the property resulting from such use.

In evaluating the reasonableness of measures to minimize harm under §774.3(a)(2), FTA will consider the preservation purpose of the Section 4(f) statute and:

- The views of the official(s) with jurisdiction over the Section 4(f) property;
- Whether the cost of the measures is a reasonable public expenditure in light of the adverse impacts of the project on the Section 4(f) property and the benefits of the measure to the property, in accordance with §771.105(d) of this chapter; and
- Any impacts or benefits of the measures to communities or environmental resources outside of the Section 4(f) property.

Project staff have consulted with MnHPO and identified consulting parties during the design of the new bridges and related work on the lagoon to avoid, minimize, and/or mitigate adverse effects from construction and operation of the project through sensitive design and the incorporation of protective measures. The design of the bridges, including span configurations, materials, and railing options, continue to be developed as part of the advancement of the design for the project.

FTA, MnDOT CRU, and the Council are responsible for the project's implementation of the Section 106 consultation process, including coordination with the USACE, which has Section 106 responsibilities as a NEPA Cooperating Agency. The USACE recognizes FTA as the Lead Federal Agency for the Section 106 process. The Project's Section 106 consultation process is summarized in Section 3.5. Table 6.6-4 lists the Section 106 coordination meetings that the Council has held under the Section 106 process. Section 3.5 provides additional information about these meetings and Appendix N includes documentation of Section 106 consultation packages and meetings.

In particular, on April 30, 2014, the Council and MnDOT CRU held a consultation meeting to review listed and eligible historic properties and potential Project effects. Comments from the consulting parties were solicited during the meeting and in written form after the meeting on these resources. A subsequent meeting was held on November 24, 2014, to:

1. Present project adjustments identified since the April 30, 2014, meeting, as adopted at the July 9, 2014, Council meeting;

TABLE 6.6-4

Council Meetings Related to Section 106

Date	Meeting Type
October 7, 2008	Public Scoping Meeting/Scoping Hearing
October 14, 2008	Public Scoping Meeting/Scoping Hearing
October 23, 2008	Public Scoping Meeting/Scoping Hearing
May 18, 2010	Public Open House
May 19, 2010	Public Open House
May 20, 2010	Public Open House
April 12, 2012	Section 106 Consulting Parties Meeting
April 30, 2014	Section 106 Consulting Parties Meeting
November 24, 2014	Section 106 Consulting Parties Meeting
February 6, 2015	Section 106 Consulting Parties Meeting
February 24, 2015	Section 106 Consulting Parties Meeting
April 22, 2015	Section 106 Consulting Parties Meeting
June 16, 2015	Supplemental Draft EIS Public Open House and Hearing
June 17, 2015	Section 106 Consulting Parties Meeting
June 17, 2015	Supplemental Draft EIS Public Open House and Hearing
June 18, 2015	Supplemental Draft EIS Public Open House and Hearing
July 29, 2015	Section 106 Consulting Parties Meeting
September 23, 2015	Section 106 Consulting Parties Meeting
December 3, 2015	Section 106 Consulting Parties Meeting
February 25, 2016	Section 106 Consulting Parties Meeting

2. Consult to consider effects to historic properties and reach agreement on determinations of effect; and,
3. Identify measures to avoid, minimize, or mitigate impacts to architecture/history and archaeology resources for inclusion in the Section 106 Agreement.

Further, in February 2015, the Council and MnDOT CRU held two Section 106 consultation meetings. At the February 6, 2015, meeting, the Council, and MnDOT CRU presented revised bridge design concepts and discussed effects related to the new crossing over the Kenilworth Lagoon/Grand Rounds Historic District. At the February 24, 2015, meeting, the Council and MnDOT CRU led a discussion on effects to historic properties throughout the Project area and provided an overview of the content and consulting parties' roles in the development of a Section 106 agreement.

The design of the bridges, including span configurations, materials, and railing options, continued to be developed as part of the advancement of the design for the Project, as were designs to minimize or mitigate adverse effects on the lagoon's topographical features, vegetation, and WPA-era retaining walls. Within the Section 106 process, the potential bridge designs were the focus of the July 29, 2016, consulting parties meeting. Within their August 21, 2015, letter to the MnDOT CRU, the MnHPO provided their comments in response to that meeting and the associated correspondence and review material submitted by the Council to the MnHPO on July 21, 2015. See Appendix N for a copy of that letter.

Subsequent Section 106 consultation meetings focused on findings of effect and resolution of adverse effects, including the Project's effects on the Kenilworth Lagoon/Grand Rounds Historic District. Among other topics, coordination activities between the Council and MnHPO and others focused on the visual and noise effects of

the Project on the Kenilworth Channel/Lagoon as an element of the Minneapolis Chain of Lakes Regional Park and helped lead to the development of the Project's Section 106 Memorandum Agreement for the Kenilworth Lagoon/Grand Rounds Historic District. The Section 106 Memorandum of Agreement is documentation that commits FTA and the Council to implement measures to avoid, minimize, or mitigate adverse effects on historic properties and archaeological resources (see Appendix H).

All Possible Planning to Minimize Harm Determination: Based on the summary within this section, FTA has determined in accordance with 23 CFR Part 774.17 that all possible planning to minimize harm has been conducted and implemented through the completion of the project's Section 106 process and with execution of the Project's Section 106 Agreement.

D. Least Overall Harm Analysis

Per 23 CFR Part 774.3(c), if the Section 4(f) analysis for a property that will be used by a project concludes that there is no feasible and prudent avoidance alternative, then FTA may approve, from among the remaining alternatives that use Section 4(f) property, only the alternative that causes the least overall harm in light of the statute's preservation purpose. If the assessment of least overall harm finds that two or more alternatives are substantially equal, FTA can approve any of those alternatives. To determine which of the alternatives will cause the least overall harm, FTA must compare seven factors set forth in 23 CFR 774.3(c)(1) concerning the alternatives under consideration (see Section 6.4.3 of this Final EIS for a description of those seven criteria).

The consultation process, including meetings, is ongoing and will continue to proceed through execution of the Section 106 Agreement. The Council and FTA have also committed to continue Section 4(f) coordination activities with the MPRB related to proposed bridge crossing designs. The continuing coordination efforts between the Council and the MPRB may include the development of additional bridge design concepts and minimization and mitigation measures. In general, these Section 4(f) coordination activities will focus on the visual and noise effects of the Project on the Kenilworth Channel/Lagoon as an element of the Minneapolis Chain of Lakes Regional Park and will be coordinated with the MnHPO through development of a Section 106 Agreement for the Kenilworth Lagoon/Grand Rounds Historic District.

A final determination of least overall harm requires the completion of the process to determine all possible planning to minimize harm. Because the Kenilworth Lagoon/Grand Rounds Historic District is a Section 106 resource, all possible planning to minimize harm for it will be completed when the Section 106 process concludes with an executed Section 106 Agreement. That Section 106 Agreement will specify how the project will resolve the adverse effect it will have on the Kenilworth Lagoon/Grand Rounds Historic District. This update includes a least overall harm analysis based on an anticipated Section 106 Agreement that will address the adverse effect to the Kenilworth Lagoon/Grand Rounds Historic District.

As the Draft Section 4(f) Evaluation Update was being prepared, two options (in addition to the Project) that would have resulted in the use of the Kenilworth Lagoon/Grand Rounds Historic District remained under consideration: a) Shallow LRT Tunnel – Under Kenilworth Lagoon²⁴ (Exhibit 6.6-36); and b) Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon (Exhibit 6.6-37). Following is a description of those two options that remained under consideration and a comparison of those options with the Project, based on the Shallow LRT Tunnel – Over Kenilworth Lagoon option that was developed and evaluated as a part of the project's design adjustment process (see Section 2 and Appendix F of this Final EIS for additional information on the evaluation process and measures). Detailed descriptions of the Project, including where light rail will cross the Kenilworth Lagoon, are provided in Chapter 2 of this Final EIS, as well as previously

²⁴ Two variations of the Shallow LRT Tunnel – Over Kenilworth Lagoon option were initially developed; one short and one long. Exhibits 2.3-11 and 2.3-12 in Appendix F of this Final EIS illustrate the extent of the LRT tunnel under the short and long options, respectively. Both variations of the Shallow LRT Tunnel – Under Kenilworth Lagoon would have identical use and impacts to the Kenilworth Lagoon. The short tunnel variation was used for this least overall harm analysis because the overall tunnel length in that variation would be more similar to the tunnel length under the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon.

within this chapter. Base year and year-of-expenditure capital costs of the Project are provided in Chapters 2 and Chapter 7 of this Final EIS, respectively.

E. Shallow LRT Tunnel – Under Kenilworth Lagoon Option

The Shallow LRT Tunnel – Under Kenilworth Lagoon option, which is a variation of the Shallow LRT Tunnel – Over Kenilworth Lagoon option, will extend the LRT alignment under the Kenilworth Lagoon to a portal north of the lagoon, and it will eliminate the need for a light rail bridge over the lagoon. However, because the LRT tunnel will be constructed where there are existing wood piles, the existing wood pile bridges carrying freight rail and the trail will need to be replaced with new freight rail and trail bridges. Those two new bridges will be located on either side of the LRT tunnel alignment. Due to the tunnel's cut-and-cover construction and bridge demolition and construction, approximately all of the area across the Kenilworth Lagoon will be reconstructed, including the banks, retaining walls, and vegetation. The result will be that all of the historic components of the Kenilworth Lagoon/Grand Rounds Historic District will be removed, replaced, and reconstructed.

Beneath the lagoon, the tunnel will descend to where the tunnels will cross under the Kenilworth Lagoon, approximately 10 feet from the Kenilworth Lagoon water surface elevation (in part, the depth of the tunnel under the lagoon will be needed to provide space to replace the channel soils above the top of the tunnel after construction). Two variations of the Shallow LRT Tunnel – Over Kenilworth Lagoon option were initially developed; one short and one long. Exhibit F-28 and Exhibit F-29 in Appendix F illustrate the extent of the LRT tunnel under the short and long options, respectively.

Both variations of the Shallow LRT Tunnel – Under Kenilworth Lagoon will have identical use and impacts to the Kenilworth Lagoon. The short tunnel variation was used for comparison with the Shallow LRT Tunnel – Over Kenilworth Lagoon option (Exhibit 6.6-36) in this least overall harm analysis because the overall tunnel length in that variation will be more similar to the tunnel length under the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon (Exhibit 6.6-37).

Exhibit 6.6-38A/B illustrates the general sequence that will be used to construct the cut-and-cover tunnel under the Kenilworth Lagoon and to demolish and replace the existing freight rail and trail bridges.

Construction of the Shallow LRT Tunnel – Under Kenilworth Lagoon option would extend the overall project's construction schedule by up to one year, delaying benefits of the project for up to one year. Tunnel construction would also result in the closure of the Kenilworth Lagoon to recreational use at the construction site intermittently for approximately one year, which would effectively isolate Lake of the Isles and Cedar Lake from each other for water and ice-related activities. The tunnel construction would directly increase project costs by approximately \$60 to \$75 million (depending on the length of the tunnel extension) and the project would incur approximately \$45 to \$50 million in additional costs due to the project delay. The cost increases and project delays that would result from the Shallow LRT Tunnel - Under Kenilworth Lagoon would be over and above the capital costs summarized in Section 2.3 and Chapter 7 of this Final EIS.

FTA and the Council have concluded that the Shallow LRT Tunnel – Over Kenilworth Lagoon option will result in the least overall harm to the protected Section 4(f) property. That conclusion is based on the following (see Appendix F of this Final EIS for additional detail):

- At the November 24, 2014, Section 106 Consulting meeting, which included MnHPO and other consulting parties, the parties discussed whether minimization and mitigation efforts can adequately address the adverse effects under the Shallow LRT Tunnel – Under Kenilworth Lagoon option. The parties agreed that under (23 CFR Part 774.3(c)1(i)), the Shallow LRT Tunnel – Under Kenilworth tunnel cannot adequately be addressed, as this option will leave little (if any) of the contributing elements of the Grand Rounds Historic District.
- There would be a substantial cost difference. The Shallow LRT Tunnel – Under Kenilworth Lagoon option would result in \$60 to \$75 million in additional direct costs and \$45 to \$50 million in cost increases due to the schedule delay, for a total additional project costs of up to \$125 million. The Council approved the Project's scope and budget in July 2015. Local funding partners capped their funding commitments based

EXHIBIT 6.6-36

Shallow LRT Tunnel – Under Kenilworth Lagoon



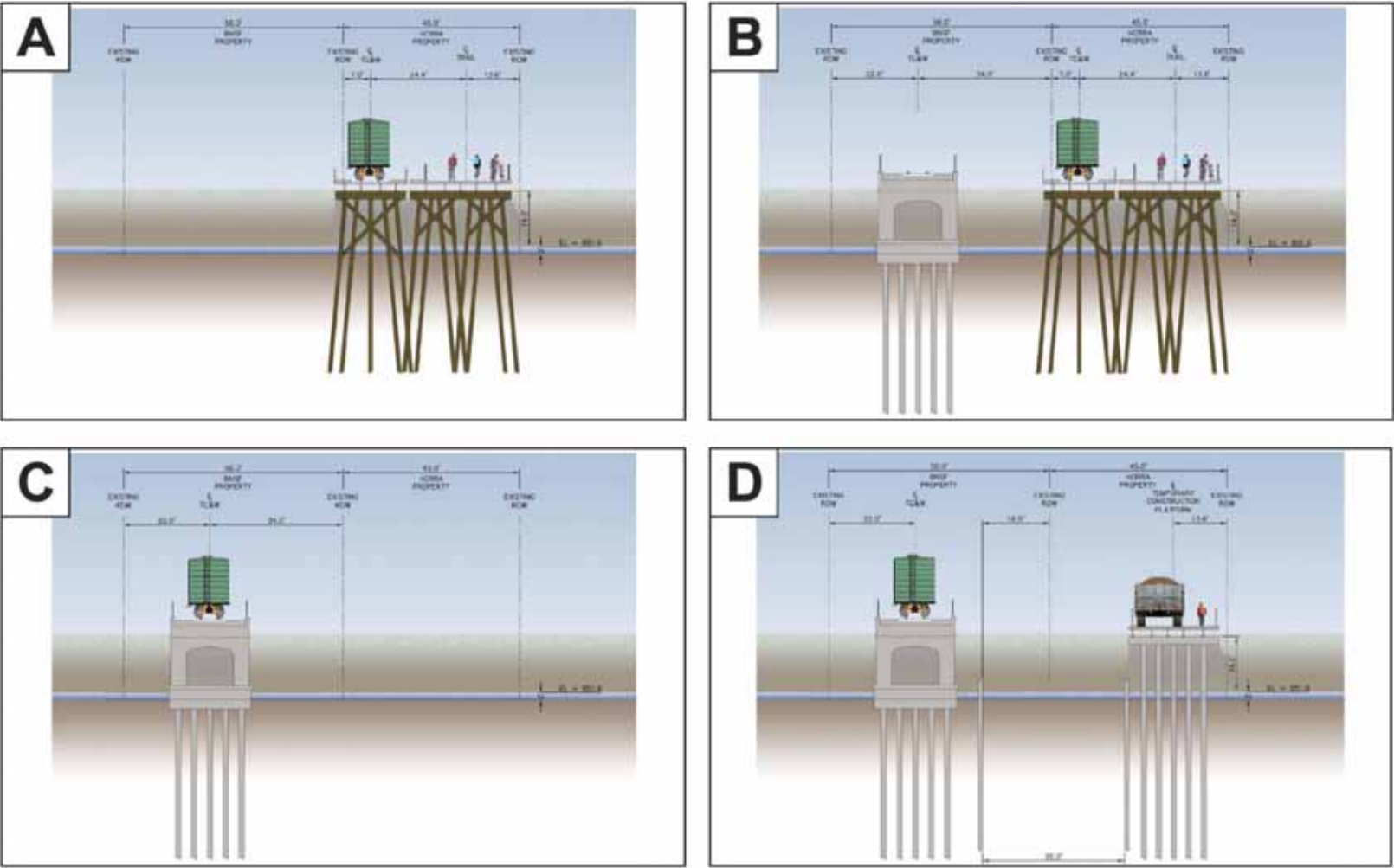
EXHIBIT 6.6-37

Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon



EXHIBIT 6.6-38A

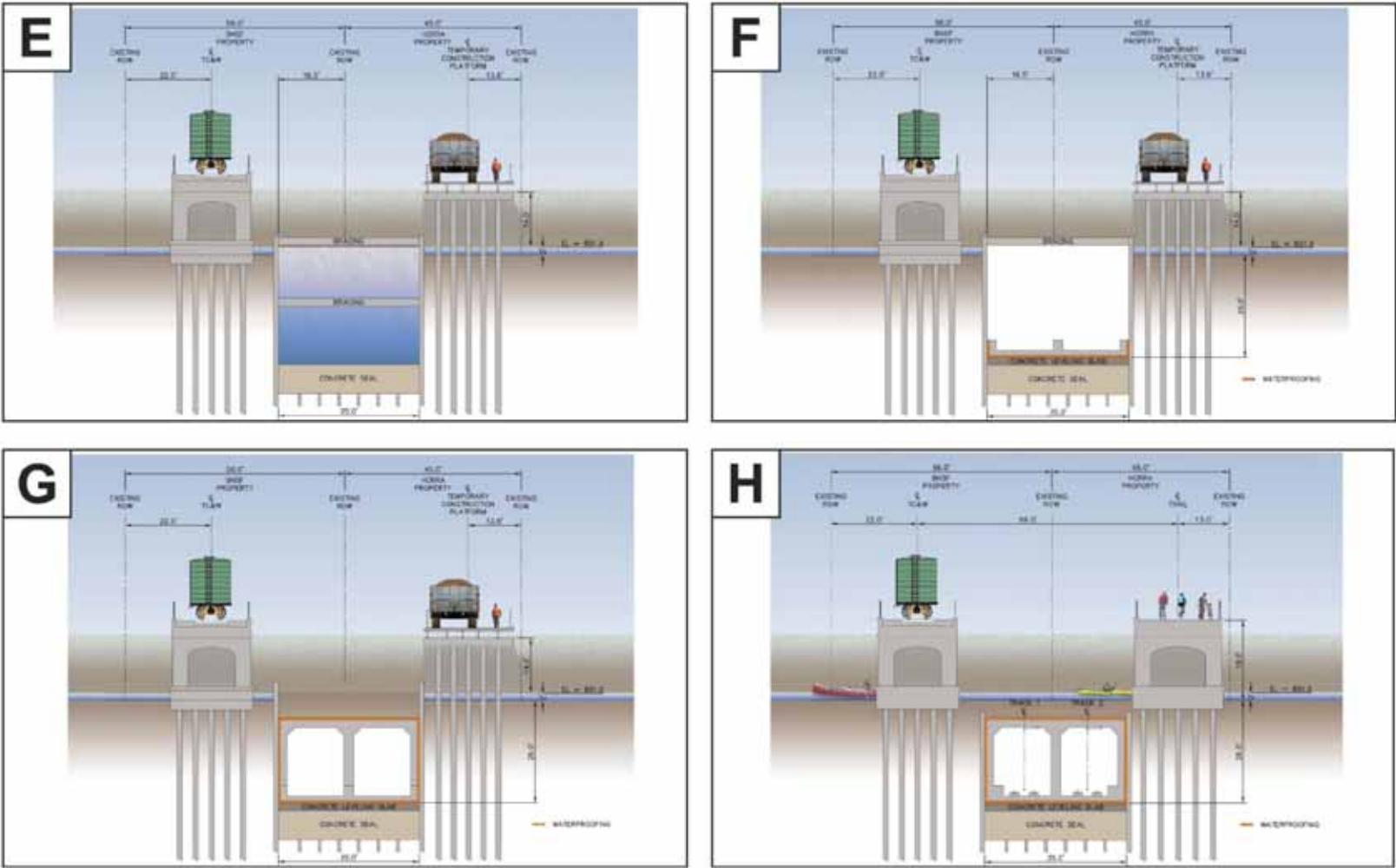
Construction Sequence for the Shallow LRT Tunnel Under Kenilworth Lagoon (cut-and cover construction at the Kenilworth Lagoon, looking northeast)





	<p>Southwest LRT FINAL EIS Construction Sequence for the Shallow LRT Tunnel Under Kenilworth Lagoon (cut-and cover construction at the Kenilworth Lagoon, looking northeast)</p>	
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EXHIBIT 6.6-38B

Construction Sequence for the Shallow LRT Tunnel Under Kenilworth Lagoon (cut-and-cover construction at the Kenilworth Lagoon, looking northeast)



	<p>Southwest LRT FINAL EIS Construction Sequence for the Shallow LRT Tunnel Under Kenilworth Lagoon (cut-and cover construction at the Kenilworth Lagoon, looking northeast)</p>	
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on the Council budget; therefore, additional cost increases from this option are not authorized and would require the support and approval from the local funding partners. Further, there would be little if any environmental benefit or benefit to the protected Section 4(f) property as a result of the substantial cost increase and project schedule delay. (23 CFR Part 774.3(c)1(vii))

For the reasons outlined in this section, FTA and the Council have determined that, compared to the Shallow LRT Tunnel – Under Kenilworth Lagoon option, the Shallow LRT Tunnel – Over Kenilworth Lagoon would result in the least overall harm to the Kenilworth Lagoon/Grand Rounds Historic District (23 CFR Part 774.3(c)1).

F. Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon Option

The Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon Option (Exhibit 6.6-36) was proposed and conceptually developed and evaluated by the MPRB. Project staff coordinated with MPRB as they independently developed and evaluated the option through a series of staff meeting in late 2014 and early 2015. Documentation of the MPRB's efforts to develop and evaluate the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon Option is provided in Appendix I.

As proposed by the MPRB, the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option, which is a variation of the Shallow LRT Tunnel – Over Kenilworth Lagoon option, would extend the LRT alignment under the Kenilworth Lagoon to a portal approximately 400 feet north of the lagoon and would eliminate the need for a light rail bridge over the lagoon. However, because the LRT tunnel would be constructed where there are existing wood piles, the existing wood pile bridges carrying freight rail and the trail would need to be replaced with two new bridges. Those two new bridges would be located on either side of the LRT tunnel alignment. Due to the tunnel construction and bridge demolition and construction, compared to the Shallow LRT Tunnel – Over Kenilworth Lagoon, a similar area across the Kenilworth Lagoon would be reconstructed, including the banks, retaining walls, and vegetation.

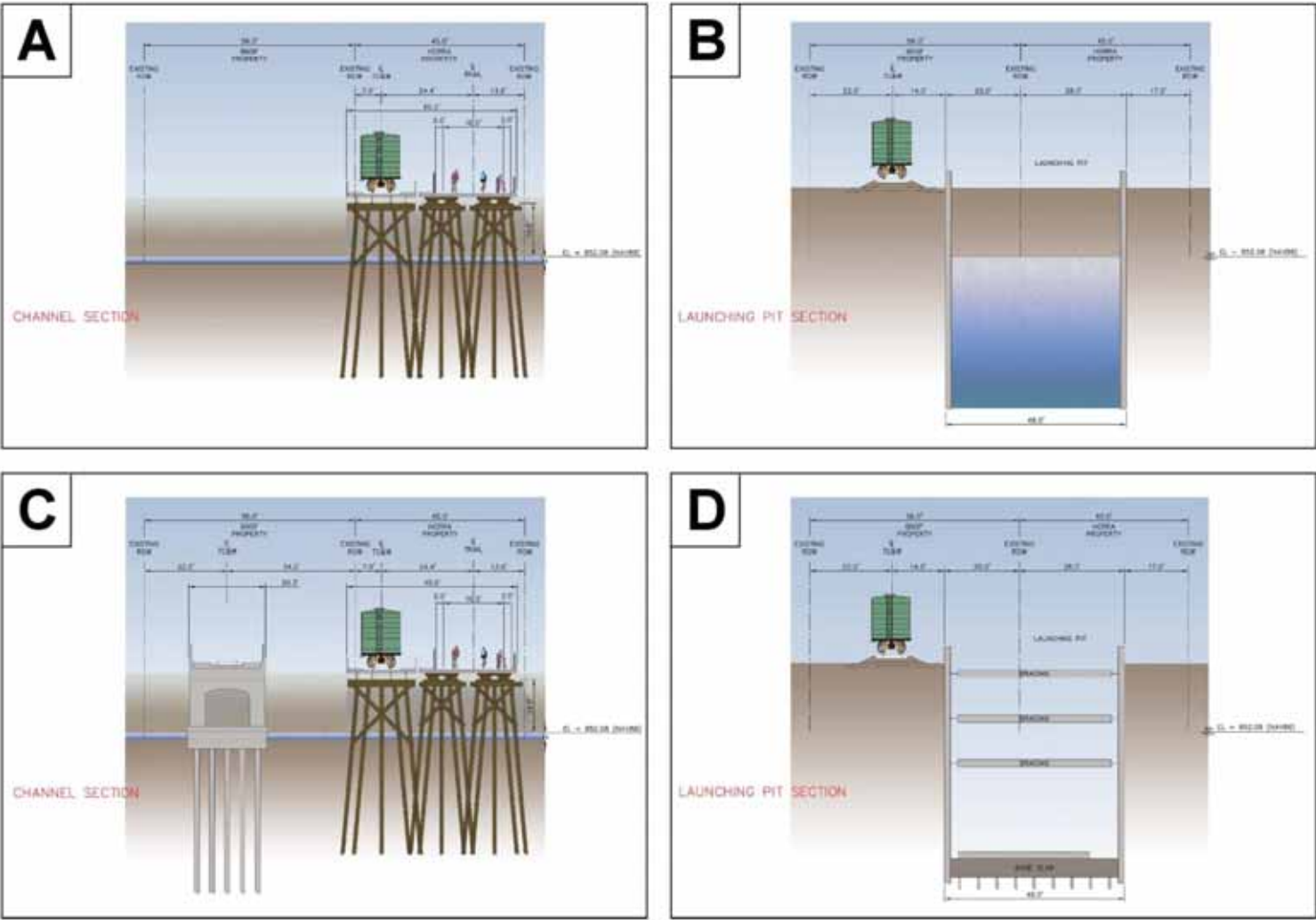
Beneath the lagoon, the tunnel would descend to where the tunnel will cross under the Kenilworth Lagoon, approximately 10 feet from the Kenilworth Lagoon water surface elevation (in part, the additional depth of the tunnel will be needed to maintain the integrity of the lagoon during construction of the tunnel under the lagoon). Exhibit 6.6-37 illustrates the extent of the LRT tunnel under the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option. Exhibit 6.6-39A/B illustrates the general sequence that would be used to construct the jacked box tunnel under the Kenilworth Lagoon and to demolish and replace the existing freight rail and trail bridges. Following is a description of the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option as provided in the MPRB's independent draft report *Kenilworth Channel – Tunnel Crossing Study* (MPRB; March 2015; page 8 – see Appendix I):

“The Jacked Box method [of tunnel construction] involves digging a pit on either side of the Kenilworth Channel and supporting the pit walls in similar fashion to the cut and cover method (sheet pile walls with bracing and bottom slab). The pits are identified as launching and receiving pits, respectively. The launching pit is larger in order to accommodate the construction of the tunnel box. For Kenilworth, the box will be approximately 205 feet in length and the pit must be at least that large to allow the box and clearances for construction. The receiving pit on the opposite side of the channel is significantly smaller. The jacking process is accomplished by hydraulic equipment and can be done either by pulling the box with high strength steel cables or pushing it with hydraulic rams. We have chosen the pulling method as the most effective for Kenilworth as it also provides improved alignment tolerances compared to the pushing method. Controlling the ground during the tunneling method is critical. As mentioned previously, the alluvial soils present along with a submerged condition result in a ‘flowing ground’ condition without ground support.

“Controlling the ground at the open face of the tunnel can be accomplished by ground modification methods such as freezing, grouting with either chemical or cement grouts, or dewatering. Dewatering is not practical due to the high permeability of the soil, the shallow design, and the presence of the channel water as a nearly infinite source of water. Ground freezing is a good option; however, consideration should be given to potential for freezing of portions of the channel water. Grouting of the soil was chosen as the best option for ground improvement. The grouting will provide a stable

EXHIBIT 6.6-39A

Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon Construction Sequence

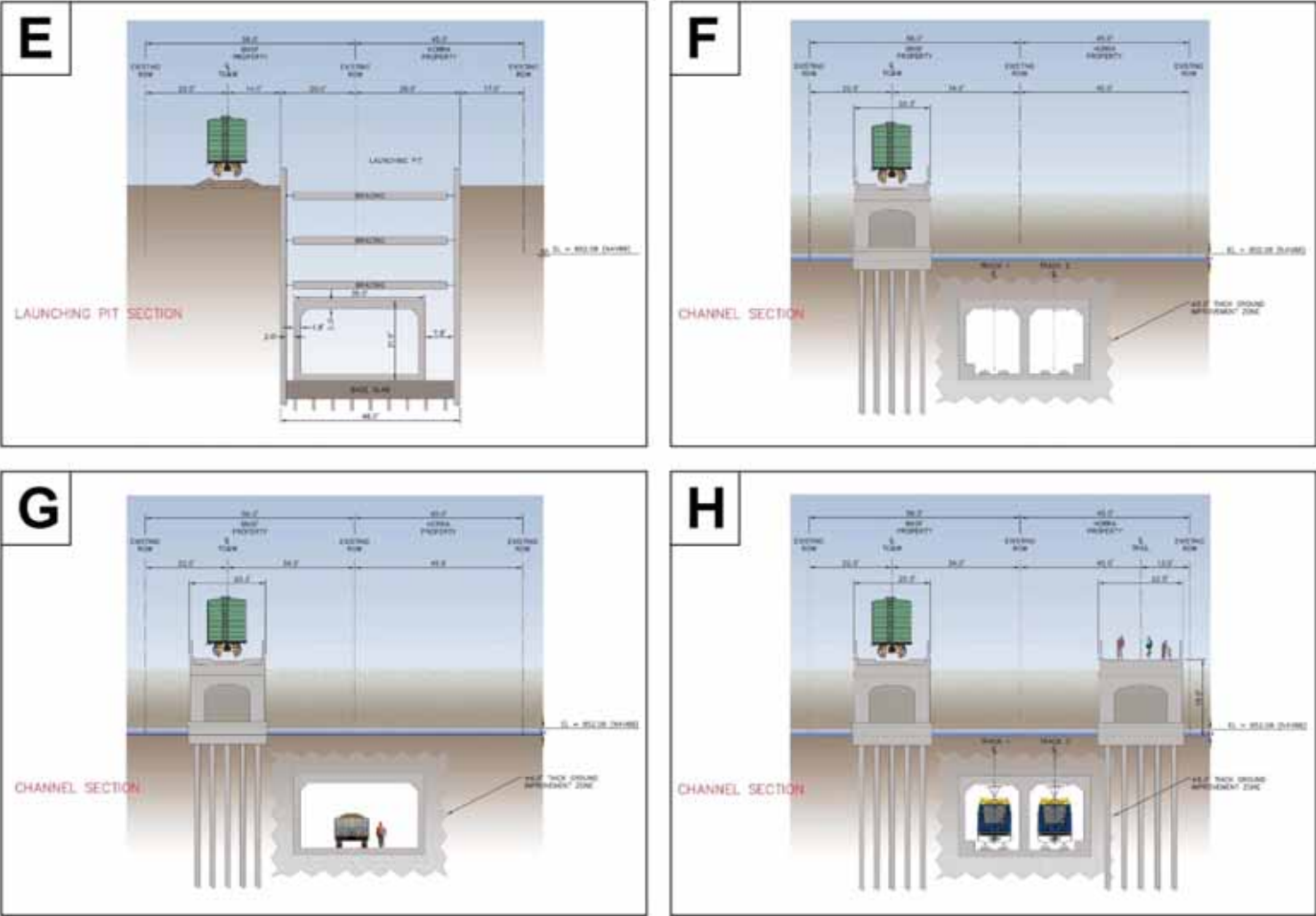


DRAFT - WORK IN PROCESS

	Southwest LRT FINAL EIS Shallow LRT Tunnel Jacked Box Tunnel Under Kenilworth Lagoon Construction		
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EXHIBIT 6.6-39B

Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon Construction Sequence



DRAFT - WORK IN PROCESS

	<p>Southwest LRT FINAL EIS Shallow LRT Tunnel Jacked Box Tunnel Under Kenilworth Lagoon Construction Sequence</p>	
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face at the leading edge of the tunnel during construction, minimize ground water intrusion during construction, and will also serve to impede ground water permanently.

“Permanent waterproofing of the tunnel box is imperative to prevent water intrusion and ice damming during cold months. The methods of membrane installation that are considered for the cut and cover tunnel are not practical for the jacked box method. For the Jacked Box method of construction, the tunnel can be effectively waterproofed by a combination of several design features.”

Construction of the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option would extend the project’s overall construction schedule by up to 12 months, delaying benefits of the project for up to 12 months. The tunnel construction will directly increase project costs by approximately \$80 to \$95 million and the project would incur approximately \$45 to \$50 million in additional costs due to the project delay, increasing the overall cost burden for the project by up to \$145 million. The cost increases and project delays that will result from the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option would be over and above the capital cost estimates in Section 2.3 and Chapter 7 of this Final EIS.

In comparing the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option to the Shallow LRT Tunnel – Over Kenilworth Lagoon option and its effects on the Kenilworth Lagoon/Grand Rounds Historic District, FTA and the Council have concluded that the Shallow LRT Tunnel – Over Kenilworth Lagoon option will result in the least overall harm to the protected Section 4(f) property. That conclusion is based on the following (see Appendix I for additional draft information on the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option that was prepared by the MPRB):

- There would be a substantial cost difference between the alternatives, as the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option will result in additional costs up to \$145 million (not accounting for potential additional delay due to a potentially longer review process – source: MPRB 2015). The Council approved the Project’s scope and budget in July 2015. Local funding partners capped their funding commitments based on the Council budget at that time; therefore, additional cost increases from this option are not authorized and will require the support and approval from the local funding partners. Further, there would be little if any environmental benefit or benefit to the protected Section 4(f) property as a result of the substantial cost increase and project schedule delay. (23 CFR Part 774.3(c)1(vii))
- The tradeoffs between the Shallow LRT Tunnel – Over Kenilworth Lagoon option and the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option were reviewed and discussed at the February 6, 2015, Section 106 Consultation meeting, which included the MnHPO (see Appendix C and Appendix E) (23 CFR Part 774.3(c)1(iv)). In summary, it was noted that both the Shallow LRT Tunnel – Over Kenilworth Lagoon and Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option would have an adverse effect on the Kenilworth Lagoon/Grand Rounds Historic District. Specifically, it was noted that the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option will result in the removal of the existing freight rail and trail bridges and construction of replacement bridges, because the tunnel will be constructed in the same location as the wood piers for the existing bridges. The Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon would also disturb and eliminate the WPA-era retaining walls and vegetation along the banks, both of which are contributing elements to the Grand Rounds Historic District. In response to an MnHPO inquiry, MPRB staff noted that the MPRB has not identified concerns related to deeply buried archaeological deposits in vicinity of where the jacked box tunnel will be located.
- On March 5, 2015, the MPRB provided the Council with a letter that summarizes the MPRB’s understanding of the project’s consultation efforts with the Council and FTA on Section 4(f) issues, particularly related to the Kenilworth Channel/Lagoon as an element of the Minneapolis Chain of Lakes Regional Park (see Appendix I). The letter documents the MPRB’s finding that, based on its independent engineering study, the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option would not be prudent, because of the additional costs and extended schedule under that option, compared to the Shallow LRT Tunnel – Over Kenilworth Lagoon. In particular, the letter states that MPRB determined

that the additional costs and extended schedule the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option would “not be prudent.”

For the reasons outlined in this section, FTA and the Council have determined that, compared to the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option, the Shallow LRT Tunnel – Over Kenilworth Lagoon option would result in the least overall harm to the Kenilworth Lagoon/Grand Rounds Historic District (23 CFR Part 774.3(c)1).

Section 4(f) Determination: Based on the above analysis and summarized in this section, FTA and the Council have determined that the Project (i.e., Shallow LRT Tunnel – Over Kenilworth Lagoon option) will result in a non-*de minimis* use of the Kenilworth Lagoon/Grand Rounds Historic District Section 4(f) property and that there is no feasible and prudent alternative that would avoid a use of this historic property. In addition, based on the summary within this section, FTA has determined, in accordance with 23 CFR Part 774.17, that all possible planning to minimize harm has been conducted and implemented through the completion of the project’s Section 106 process through the execution of a Section 106 Agreement. FTA and the Council have determined that the Project will be the alternative that will result in the least overall harm to the Kenilworth Lagoon/Grand Rounds Historic District.

6.6.2.17 Frieda and J. Neils House – No Use

A. Property Description

The Frieda and Henry J. Neils House is located at 2801 Burnham Boulevard in Minneapolis and is listed on the NRHP under Criterion C. For more detailed information on this historic, property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Frieda and Henry J. Neils House historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Frieda and Henry J. Neils historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the Frieda and Henry J. Neils House (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Frieda and Henry J. Neils House historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Frieda and Henry J. Neils House historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Frieda and Henry J. Neils House historic property.

6.6.2.18 Mahalia & Zachariah Saveland House – No Use

A. Property Description

The Mahalia & Zachariah Saveland House is located at 2405 W. 22nd Street in Minneapolis. It is eligible for the NRHP under Criterion C. For more detailed information on this historic property see Section 3.5 and Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Mahalia & Zachariah Saveland House historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Mahalia & Zachariah Saveland House historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the Mahalia & Zachariah Saveland House (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Frieda and J. Neils House historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Mahalia & Zachariah Saveland House historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Mahalia & Zachariah Saveland House historic property.

6.6.2.19 Frank W. and Julia C. Shaw House – No Use**A. Property Description**

The Frank W. and Julia C. Shaw House is located at 2036 Queen Avenue S. in Minneapolis. It is eligible for the NRHP under Criterion C. For more detailed information on this historic property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Frank W. and Julia C. Shaw House historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Frank W. and Julia C. Shaw House historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the Frank W. and Julia C. Shaw House (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Frank W. and Julia C. Shaw House historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Frank W. and Julia C. Shaw House historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Frank W. and Julia C. Shaw House historic property.

6.6.2.20 Kenwood Parkway – No Use**A. Property Description**

Kenwood Parkway, located in Minneapolis, is considered a contributing site within the overall potential Grand Rounds Historic District, which FTA and MnHPO have determined to be eligible for the NRHP under Criterion A and Criterion C. For more detailed information on this historic property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Kenwood Parkway historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Kenwood Parkway historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Kenwood Parkway (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Kenwood Parkway historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Kenwood Parkway historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Kenwood Parkway historic property.

6.6.2.21 Kenwood Park – No Use**A. Property Description**

Kenwood Park, located in Minneapolis, is considered a contributing site within the overall potential Grand Rounds Historic District, which FTA and MnHPO have determined to be eligible for the NRHP under Criterion A and Criterion C. For more detailed information on this historic property, see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Kenwood Park historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Kenwood Park historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Kenwood Park (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Kenwood Park historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Kenwood Park historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Kenwood Park historic property.

6.6.2.22 Kenwood Parkway Residential Historic District – No Use**A. Property Description**

Kenwood Parkway Residential Historic District is located on Kenwood Parkway (1805-2216 Kenwood Parkway) in Minneapolis, is considered a contributing site within the overall potential Grand Rounds Historic District and has been individually determined eligible for the NRHP under Criterion A. For more detailed information on this historic property, see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Kenwood Parkway Residential Historic District – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Kenwood Parkway Residential Historic District during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Kenwood Parkway Residential Historic District (see the Section 106 consultation documentation in Appendix H, I and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Kenwood Parkway Residential Historic District will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Kenwood Parkway Residential Historic District under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Kenwood Parkway Residential Historic District.

6.6.2.23 Kenwood Water Tower – No Use**A. Property Description**

The Kenwood Water Tower is located at 1724 Kenwood Parkway in Minneapolis, is considered a contributing site within the overall potential Grand Rounds Historic District and has been individually determined eligible for the NRHP under Criterion A and Criterion C. For more detailed information on this historic property, see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Kenwood Water Tower historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Kenwood Water Tower historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at Kenwood Water Tower (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Kenwood Water Tower historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Kenwood Water Tower historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Kenwood Water Tower historic property.

6.6.2.24 Mac Martin House – No Use**A. Property Description**

The Mac Martin House is located at 1828 Mt. Curve Avenue in Minneapolis. It is eligible for the NRHP under Criterion B. For more detailed information on this historic property, see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Mac Martin House historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Mac Martin House historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the Mac Martin House (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Mac Martin House historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Mac Martin House historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Mac Martin House historic property.

6.6.2.25 St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District – *De Minimis* Determination**A. Property Description**

The St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District, located in Minneapolis, is eligible for the NRHP under Criterion A. For more detailed information on this historic property, see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

The Project will result in the permanent incorporation of approximately 1.53 acres of property from the historic St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District; approximately 5.42 acres will be temporarily occupied for construction access (see Exhibit 6.6-40).

EXHIBIT 6.6-40

Final Section 4(f) Evaluation – St. Paul, Minneapolis & Manitoba Railroad Historic District



A portion of this rail line in Minneapolis is located within the Project corridor. The Project will shift a segment of the existing railroad tracks, from approximately I-94 to Royalston Avenue (total length of 2,543 feet), approximately 0 to 25 feet north within the existing railroad right-of-way. The continuity of the linear resource will be maintained within the historic right-of-way, resulting in a minor effect to the alignment of the tracks. BNSF trains will continue to be able to use the line. There will also be minor visual effects from the introduction of the LRT catenary along this section of the rail corridor. None of these impacts will have an adverse effect on the ability of this resource to convey its historic significance or on its historic uses as a railroad and its movement of goods on the tracks. Based on the preceding discussion and consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District (see Section 3.5 and the Section 106 consultation documentation in Appendix H of this Final EIS).

C. Determination of Permanent Section 4(f) Use: Section 4(f) *de minimis* Use

As defined in 23 CFR Parts 774.5 and 774.17, a *de minimis* use determination is made for an historic site if FTA makes a determination for a property of “No Adverse Effect” or “No Historic Properties Affected” through consultation under Section 106 of the National Historic Preservation Act (NHPA), and the HPO concurs with that determination. Because a Section 106 Finding of No Adverse Effect has been made with respect to Project actions at the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District in tandem with consultation with the MnHPO, a subsequent *de minimis* impact determination is concluded in this document. MnHPO has agreed with the *de minimis* determination concluded here and will be providing written concurrence to this effect.

6.6.2.26 Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District – No Use

A. Property Description

The Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District is within 0.25 mile of the proposed Van White Station. The Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District has been found eligible for the NRHP under NRHP Criterion A. For more detailed information on this historic property, see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway

Historic District under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Osseo Branch of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District.

6.6.2.27 Minneapolis Warehouse Historic District – No Use

A. Property Description

The Minneapolis Warehouse Historic District is located in the vicinity of 1st Avenue N., N. 1st. Street, 10th Avenue N., and N. 6th Street in Minneapolis. The Minneapolis Warehouse Historic District has been found eligible for the NRHP under NRHP Criterion A and Criterion C. For more detailed information on this historic property, see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the Minneapolis Warehouse Historic District – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the Minneapolis Warehouse Historic District during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the Minneapolis Warehouse Historic District (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Minneapolis Warehouse Historic District will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the Minneapolis Warehouse Historic District under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Minneapolis Warehouse Historic District.

6.6.2.28 William Hood Dunwoody Institute – No Use

A. Property Description

The William Hood Dunwoody Institute is located at 818 Dunwoody Boulevard in Minneapolis (see Exhibit 3.5-2). The Dunwoody Industrial Institute has been found eligible for the NRHP under NRHP Criterion A. For more detailed information on this historic property see Appendix H of this Final EIS.

B. Determination of Permanent Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in a permanent incorporation of land from the William Hood Dunwoody Institute historic property – as such, there will not be a Section 4(f) permanent use of the property.

C. Determination of Temporary Section 4(f) Use

As illustrated in the Southwest LRT preliminary engineering plans, the Project will not result in the temporary use of property from the William Hood Dunwoody Institute historic property during construction.

D. Determination of Constructive Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to Project impacts at the William Hood Dunwoody Institute historic property (see the Section 106 consultation documentation in Appendixes H, I, and N of this Final EIS). Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the

William Hood Dunwoody Institute historic property will not be substantially impaired by proximity impacts associated with the Project, and therefore no constructive use will occur, consistent with 23 CFR Part 774.15(a).

E. Section 4(f) Use Determination

Based on the above findings, FTA has determined that there will be no permanent or temporary Section 4(f) use of the William Hood Dunwoody Institute historic property under the Southwest LRT Project and that the proximity impacts associated with the Southwest LRT Project will not result in a Section 4(f) constructive use of the Dunwoody Institute historic property.

6.7 Coordination

This section summarizes the Project's Section 4(f) coordination activities that have occurred since publication of the Draft Section 4(f) Evaluation and the Draft EIS, which address Section 4(f) coordination and concurrence requirements set forth in 23 Part CFR 774.

6.7.1 Department of Interior (DOI)

The Draft Section 4(f) Evaluation was provided to the DOI for review and comment during the Draft EIS comment period, which concluded on December 31, 2012. The DOI's comments on the Draft Section 4(f) Evaluation are included in Appendix L; DOI comments on the Draft Section 4(f) Evaluation Update are provided in Appendix M.

6.7.2 Officials with Jurisdiction

Following is a summary of the Section 4(f) coordination activities that have occurred with officials with jurisdiction since publication of the Draft Section 4(f) Evaluation and the Draft EIS. See Appendix H for documentation of the Section 106 consultation process and Appendix I for documentation of Section 4(f) coordination meetings with officials with jurisdiction, including meeting agendas, notes, and handouts.

- **Eden Prairie.** FTA and Council staff met with City of Eden Prairie staff on February 20, 2015, to review the project's construction plan for Purgatory Creek Park and modifications to the plan were subsequently made by the Council, as reflected in this assessment. See Appendix I for meeting notes and materials. On July 21, 2015, the City of Eden Prairie provided the Council with comments on the Supplemental Draft EIS, including comments concerning the Draft Section 4(f) Evaluation Update. Those comments have been addressed in this Final Section 4(f) Evaluation. All substantive comments from the City of Eden Prairie received during the Supplemental Draft Evaluation public comment period are documented and responded to in Appendix M. In January 2016, the City of Eden Prairie concurred in writing with the FTA's temporary occupancy exception for Purgatory Creek Park (see Appendix I).
- **Minnetonka.** FTA and Council staff met with City of Minnetonka staff on January 5, 2016, to review the Project's construction plan for Purgatory Creek Park and modifications to the plan were subsequently made by the Council, as reflected in this assessment. In March 2016, the City of Minnetonka concurred in writing with the FTA's Section 4(f) *de minimis* use determinations for the Unnamed Open Space B and the Opus development area trail network.
- **Minneapolis Park and Recreation Board.** FTA and Council staff met with MPRB staff on February 13 and March 6, 2015, to coordinate on determinations and avoidance, minimization, and mitigation measures for MPRB Section 4(f) properties that are addressed within this Draft Section 4(f) Evaluation Update—those meetings also included staff from Hennepin County and Minneapolis. Agendas, notes, and handouts from those meetings are provided in Appendix I. On March 5, 2015, the MPRB provided the Council with a letter that summarizes the MPRB's understanding of the Project's consultation efforts to date with the Council and FTA on Section 4(f) issues, particularly related to the Kenilworth Channel/Lagoon as an element of the Minneapolis Chain of Lakes Regional Park (see Appendix I). In particular, the letter states that MPRB determined that the additional costs and extended schedule for the Shallow LRT Tunnel – Jacked Box Tunnel Under Kenilworth Lagoon option “will not be prudent.” On July 21, 2015, the MPRB provided the Council with comments on the Supplemental Draft EIS, including

comments concerning the Draft Section 4(f) Evaluation Update. Those comments have been addressed in this Final Section 4(f) Evaluation. All substantive comments from the MPRB received during the Supplemental Draft Evaluation public comment period are documented and responded to in Appendix M. In January 2016, the MPRB concurred in writing with the FTA's Section 4(f) *de minimis* use determinations for the Kenilworth Channel/Lagoon (as an element of the Minneapolis Chain of Lakes Regional Park) and the Bryn Mawr Meadows Park and with the FTA's temporary occupancy exception for Cedar Lake Park (see Appendix I).

- Minnesota Historic Preservation Officer.** Table 6.6-4 lists the Council's meetings that were held related to the Section 106 process, which included participation by MnHPO. In particular related to coordination with the Project's Section 4(f) process, on April 30, 2014, the Council and MnDOT CRU held a consultation meeting to review listed and eligible historic properties and potential project effects. Comments from the consulting parties were solicited during the meeting and in written form after the meeting on these resources. A subsequent meeting was held on November 24, 2014, to: (1) present project adjustments identified since the April 30, 2014 meeting, as adopted at the July 9, 2014, Council meeting; (2) consult to consider effects to historic properties and reach agreement on determinations of effect; and (3) identify measures to avoid, minimize, or mitigate impacts to architecture/history and archaeology resources for inclusion in the Section 106 Agreement. In February 2015, the Council and MnDOT CRU held two Section 106 consultation meetings. At the February 6, 2015, meeting, the Council and MnDOT CRU presented revised bridge design concepts and discussed effects related to the new crossing over the Kenilworth Lagoon. At the February 24, 2015, meeting, the Council and MnDOT CRU led a discussion on effects to historic properties throughout the project area and provided an overview of the content and consulting parties' roles in the development of a Section 106 agreement. Within the Section 106 process, the potential bridge designs were the focus of the July 29, 2016 Section 106 consultation meeting, with an update on the designs provided at the September 23, 2015, consultation meeting. Within their August 21, 2015, letter to the MnDOT CRU, the MnHPO provided their comments in response to that meeting and the associated correspondence and review material submitted by the Council to the MnHPO on July 21, 2015. See Appendix N for a copy of that letter. The September 23, 2015, consultation meeting was also used to provide information on changes to traffic and parking that could affect historic properties. In December 2015, the MnHPO concurred in writing with FTA's Section 4(f) temporary occupancy exception determinations for the Minikahda Club and the Cedar Lake Parkway (see Appendix I). Through its concurrence with the Section 106 finding of adverse effect for the St. Paul, Minneapolis & Manitoba Railroad Historic District, the MnHPO concurred with FTA's Section 4(f) *de minimis* use determination for the St. Paul, Minneapolis & Manitoba Railroad Historic District (see Appendix H).

In addition, the project's Draft Section 4(f) Evaluation was provided to the officials with jurisdiction for review and comment during the Draft EIS comment period, which concluded on December 31, 2012, and with the Draft Section 4(f) Evaluation Update for review and comment during the Supplemental Draft EIS comment period, which concluded on July 21, 2015. All substantive comments received from officials with jurisdiction on the Draft EIS (including the Draft Section 4(f) Evaluation) and the Supplemental Draft EIS (including the Draft Section 4(f) Evaluation Update) are addressed in the Final EIS (see Appendix L and Appendix M, respectively).

6.7.3 Public

The Draft Section 4(f) Evaluation was provided to the public for review and comment during the official Draft EIS comment period, which concluded on December 31, 2012, and with the Draft Section 4(f) Evaluation Update for review and comment during the Supplemental Draft EIS comment period, which concluded on July 21, 2015. In addition, the Amended Draft Section 4(f) Evaluation was provided to the public for review and comment from January 11, 2016 through February 25, 2016. All substantive comments received from officials with jurisdiction on the Draft EIS (including the Draft Section 4(f) Evaluation), the Supplemental Draft EIS (including the Draft Section 4(f) Evaluation Update), and the Amended Draft Section 4(f) Evaluation are addressed in this Final EIS (see Appendix L for comments and responses on the Draft EIS

and Appendix M for comments and responses on the Supplemental Draft EIS and the Amended Draft Section 4(f) Evaluation).

6.8 Determination of Section 4(f) Use

Based on Southwest LRT preliminary engineering plans and analysis conducted to-date, FTA has made the following Section 4(f) determinations:

- The Project will result in a non-*de minimis* use of the Kenilworth Lagoon/Grand Rounds Historic District historic Section 4(f) property and there is no feasible and prudent alternative that would avoid a use of this historic property. In addition, based on the summary within this section, FTA has determined in accordance with 23 CFR Part 774.17 that all possible planning to minimize harm has been conducted and implemented through the completion of the Project's Section 106 process through the execution of the Section 106 Memorandum of Agreement (see Appendix H). Further, FTA and the Council have determined that the Project is the alternative that would result in the least overall harm to the Kenilworth Lagoon/Grand Rounds Historic District.
- The Project will have Section 4(f) *de minimis* impacts on four Section 4(f) park/recreational properties – Unnamed Open Space B, the Opus development area trail network, Kenilworth Channel/Lagoon (as an element of the Minneapolis Chain of Lakes Regional Park), and Bryn Mawr Meadows Park, and a Section 4(f) *de minimis* impacts on one historic property – the St. Paul, Minneapolis & Manitoba Railroad Historic District. Measures to minimize harm, such as avoidance, minimization, mitigation, and enhancement measures, include the following:
 1. **Unnamed Open Space B.** Most of the natural areas of Unnamed Open Space B, which are predominantly located in the northern portion of the property, will not be directly affected by the Project. Those areas, such as the wetland, will not be altered by the Project, either permanently or temporarily. In addition, the proposed light rail alignment will generally be screened from view from those natural areas due to retained trees and existing residential buildings located between the proposed alignment and those natural areas. The recreation activities that currently occur within Unnamed Open Space B will be maintained both during and after construction of the Project. The Council will also provide the City of Minnetonka and the public with ongoing notification of construction activities within the open space, such as the timing and location of heavy construction activities and trail detours. All areas of the remaining Unnamed Open Space B property that will be affected by Project construction activities will be restored to existing conditions or better and restoration plans will be developed and implemented in consultation with the City of Minnetonka.
 2. **Opus Development Area Trail Network.** Each new trail segment will have the same or better physical and functional characteristics of the trail segment that it will replace. Specifications for the new replacement trail segments have and will be developed in consultation with the City of Minnetonka. Construction activities within the Opus development area trail network include grading, vegetation removal and replacement, landscaping, trail repaving segments of the trail that will remain in place to match new trail segments, temporary trail connections and signage, and other activities associated with reconstruction of affected trails. Replanting specifications for the temporary construction areas associated with alternations to the Opus development area trail network will be agreed upon between the Council and City of Minnetonka. The Project will provide the public and the City of Minnetonka with construction detour information. Further, the Project will restore all segments of the Opus development area trail network that are altered (but not permanently moved by the Project) to pre-construction conditions or better, based on specifications agreed to between the Council and the City of Minnetonka. The design of the Project has and will continue to ensure that recreation activities that currently occur within the Opus development area trail network will be maintained both during and after construction of the Project.
 3. **Kenilworth Channel/Lagoon (as an element of the Minneapolis Chain of Lakes Regional Park).** The Council and FTA have participated in coordination activities with the MPRB to identify avoidance, minimization, and mitigation measures to address the Project's use of and effects on the

recreational attributes, facilities, and activities of the Kenilworth Channel/Lagoon, as described in Section 6.6.1.10. The coordination efforts between the Council and the MPRB included the development of additional bridge design concepts and minimization and mitigation measures. These Section 4(f) coordination activities focused on the visual and noise effects of the Project on the Kenilworth Channel/Lagoon and were coordinated with the development of the Section 106 Memorandum of Agreement for the Kenilworth Lagoon/Grand Rounds Historic District historic property (see Section 3.5 and Appendix H for additional information on the historic property).

4. **Bryn Mawr Meadows Park.** All existing trail connections for the Luce Line Trail will be maintained in the long-term under the Project. Except for the potential for short-term trail closures to ensure trail user safety, all existing trail connections will be maintained during construction of the new trail alignment and elevated trail crossing. During those short trail closures, trail users will be provided with detour routes and information. Under the current construction plan, temporary trails will be constructed to allow for the removal of existing trail segments and construction of new trail segments. Construction activities within Bryn Mawr Meadows Park will be closely coordinated with MPRB to help avoid and minimize effects on recreational activities within the park. The Project will also provide the MPRB and the public with ongoing notification of construction activities within the park, such as the timing and location of trail detours. All areas of the park that are affected by construction activities outside of the permanent easement area will be restored to existing conditions or better.
 5. **St. Paul, Minneapolis & Manitoba Railroad Historic District.** All possible planning to minimize harm to the historic district was conducted and implemented through the completion of the Project's Section 106 process and through the execution of the Project's Section 106 Agreement (see Appendix H).
- The Project will result in Section 4(f) temporary occupancies during construction of two Section 4(f) park/recreation properties – Purgatory Creek Park and Cedar Lake Park, and two historic properties – Minikahda Club and Cedar Lake Parkway. FTA has determined that the Section 4(f) temporary occupation exception criteria in 23 CFR Part 774.13(d) have been met in all four of these instances and therefore no use will result at any of these four properties.

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7 Financial Analysis

This chapter presents a summary of the financial analysis for the Locally Preferred Alternative (LPA) and Locally Requested Capital Investments (LRCIs), as described in Chapter 2. This chapter also includes a description of the local funding partners and the capacity of the partners to fund the LPA and LRCIs. This chapter includes the following sections:

- 7.1 Capital Funding Strategy
- 7.2 Operating Funding Strategy
- 7.3 Risk Analysis
- 7.4 New Starts Rating

7.1 Capital Funding Strategy

This section describes the basis of the capital cost estimate, the methodology used to develop the capital cost estimates, and the year-of-expenditure cost estimates and funding plan for the LPA and LRCIs.

7.1.1 Basis of the Capital Cost Estimate

The capital cost estimate included in this financial analysis for the LPA and LRCIs was developed based on the Preliminary Engineering Plans (see Appendix E and Section 2.1).

7.1.2 Methodology

The year-of-expenditure (YOE) capital cost estimates were developed using the Federal Transit Administration (FTA) Standard Cost Category (SCC) workbook.¹ The YOE capital cost estimates for the light rail components of the LPA are based on quantity measurements from the Preliminary Engineering Plans and unit costs derived from local and national sources. The YOE capital cost estimate is based on an annual inflation rate of 3 percent (see Section 2.3 for the LPA base year cost estimates).

7.1.3 Year-of-Expenditure Capital Cost Estimates

Capital cost estimates for the LPA are in YOE dollars and are shown in Table 7.1-1. YOE capital cost estimates for the LRCIs are shown in Table 7.1-2. The cost estimates will be refined during the Engineering phase. A description of the plan for funding the LPA and LRCIs, which will be funded separately, is provided in Section 7.1.4

TABLE 7.1-1
YOE Capital Cost Estimate for the LPA, by FTA Standard Cost Category (millions)^a

FTA Standard Cost Category	YOE Capital Cost (millions)
Guideway & Track Elements	\$383.665
Stations, Stops, Terminals, Intermodal	\$70.110
Support Facilities: Yards, Shops, Administration Buildings	\$89.769
Sitework and Special Conditions	\$174.224
Systems	\$238.339
Right-of-Way, Land, Existing Improvements	\$211.191
Vehicles	\$126.370
Professional Services	\$276.381
Unallocated Contingency	\$165.704
Finance	\$55.000
Total	\$1,790.754

^a Does not include LRCIs.

Source: Council, 2016.

¹ See http://www.fta.dot.gov/12305_15612.html.

TABLE 7.1-2

YOE Capital Cost Estimates for LRCIs (YOE dollars, in thousands)

Jurisdiction / LRCIs	YOE Costs (thousands)
Eden Prairie	
LRCI #1 N-S Roadway	\$2,026
LRCI #2 Trail from Golden Triangle Station	\$1,043
LRCI #3 SouthWest Station Trail	\$1,255
LRCI #4 Catenary Poles	\$817
LRCI #5 Decorative Street Lighting	\$139
LRCI #6 Decorative Fencing and Bridge Railing	\$1,753
LRCI #7 Planter Boxes	\$425
LRCI #8 Bridge Aesthetics Upgrade	\$1,996
LRCI #9 Embedded Track	\$627
LRCI #10 Public Plaza at Stations	\$1,300
LRCI #11 Technology Drive Extension	\$128
Minnetonka	
LRCI #12 Extension of 17th Avenue	\$484
LRCI #13 Guideway Profile Adjustment	\$1,452
Hopkins	
LRCI #14 17th Avenue Water Main and Sewer	\$145
St. Louis Park	
LRCI #17 Xenwood Avenue Underpass	\$4,947
LRCI #32 Beltline Blvd/CSAH 25 Improvements	\$1,328
Hennepin County	
LRCI #26 New Trail between Light Rail Transit Tracks and CSAH 61	\$1,690
LRCI #27 Fiber Optic Conduit	\$7,818
Total	\$29,305

Source: Council, LRCI cost estimates September 2015.

7.1.4 Capital Funding

The Metropolitan Council 2040 Transportation Policy Plan (TPP) is based on the assumption that for rail projects, the region will secure federal New Starts funds for 50 percent of the cost. For the LPA, the remaining 50 percent of the cost is proposed to be funded from the following sources: 9.2 percent from the State of Minnesota; 27.7 percent from the Counties Transit Improvement Board (CTIB); 9.2 percent from Hennepin County Regional Railroad Authority (HCRRA); 3.7 percent from additional local contributions; and 0.2 percent from the Federal Surface Transportation Program (see Table 7.1-3).

TABLE 7.1-3

LPA Capital Cost Funding by Source (year of expenditure dollars, in millions)^a

Source	Share	Contribution
Federal Transit Administration ^b	50.0%	\$895
State of Minnesota	9.2%	\$165
Counties Transit Improvement Board	27.7%	\$496
Hennepin County Railroad Authority	9.2%	\$165
Other Local Funding	3.6%	\$65
Federal Surface Transportation Program	0.2%	\$4
Total	100%	\$1,791

^a Does not include LRCIs.^b Source: Council, 2016.

The funding sources for LRCI costs, which could be federal non-New Starts or local sources, are the responsibility of the LRCI sponsors. LRCI sponsors have committed funds for design and environmental activities. Following the opening of construction bids, LRCI sponsors will need to commit funds for construction if they wish to proceed with implementing the LRCIs.

Following is additional information on funding from New Starts, the State of Minnesota, CTIB, and HCRRA.

7.1.4.1 Federal Section 5309 Capital Investment Grant Program

The Federal Section 5309 Capital Investment Grant Program, under which the Project qualifies as a New Starts project, is anticipated to provide 50 percent of the LPA funding. The Council submitted a New Starts submittal as part of the request to advance into Preliminary Engineering (now known as Project Development) in 2010. A New Starts submittal update was submitted in September 2014 followed by another update in August 2015. The FTA 2016 proposed budget included a recommendation for a Full Funding Grant Agreement for the Southwest Light Rail Transit (LRT) Project, including funding for the first-year installment of \$150 million.

7.1.4.2 Counties Transit Improvement Board

The principal local funding source for the LPA, and a source of transit funding stability in the region, is the CTIB. It typically funds up to 30 percent of the capital cost of rail transit projects. CTIB is currently anticipated to fund approximately 27.7 percent of the LPA cost. The CTIB was authorized by the legislature and confirmed by five counties in March and April 2008. After the legislation was enacted, boards of eligible counties in the metropolitan region were required to vote whether or not to levy the tax and join the Joint Powers Board. Anoka, Dakota, Hennepin, Ramsey, and Washington Counties voted to join the Board, thus fulfilling the legislative requirement that at least two counties enact the tax in order to create the Board.

According to the enabling legislation, the purpose of the CTIB is to allocate the transit tax funds to transit purposes in member counties. The CTIB has independent bonding authority, with the transit tax as security, and counties that join must keep collecting revenues even if they choose to leave the board, until all obligations made while they were members are repaid.

The Board may fund any project it chooses, so long as it: 1) is within the taxing district; 2) is consistent with the regional long-range transit plan established by the Metropolitan Council; and 3) does not infringe upon any small county's minimum funding guarantee (which guarantees that any member is guaranteed to receive at least 1 percent of total sales tax proceeds for fiscal year 2009, 2010, 2011, and 2012).

The Board's membership includes representatives of each member county as well as a representative of the Metropolitan Council. The criteria for grant awards include: (1) being consistent with Council's TPP; (2) adhering to transitway purposes; and (3) granting each of its county members at least 1 percent of total sales tax proceeds for fiscal year 2009, 2010, 2011, and 2012.

7.1.4.3 State of Minnesota

The State of Minnesota historically funds up to 10 percent of the capital cost of rail transit projects. The State is currently anticipated to fund approximately 9.2 percent of the LPA cost through a combination of a new transit sales tax, bonding, or appropriations. It is anticipated that the bonds will be general obligation debt to fund its share of the capital plan. The state of Minnesota has earned the following ratings from the three rating services: Aa1 from Moody's, AA+ from Standard & Poor's, and AA+ from Fitch.

7.1.4.4 Regional Railroad Authorities

Regional Railroad Authorities (RRAs) are established as political subdivisions of the state under Minnesota Statutes 398A. RRAs have powers similar to the county for the specific purpose of providing for the planning, preservation, and improvement of rail service including passenger rail service and to provide for the preservation of abandoned rail right-of-way for future transportation uses. RRAs have the authority to levy a property tax up to 0.04835 percent of the market value of all taxable property within the county. RRAs are also authorized to issue debt under chapter 398A.

HCRRA obtains its funds from a property tax levied under the authority of Minnesota Statute 398A, plus interest earned on balances. The HCRRA is currently anticipated to fund approximately 9.2 percent of the

LPA cost. This tax is distinct from the Metropolitan Council's property tax authority. The tax was levied in the amount of \$18,000,000 for the 2012 budget year, which is considerably less than the levy limit established in Minnesota Statute 398A, which would yield approximately \$70,500,000 per year.

7.2 Operating Funding Strategy

This section provides a summary of the LPA's estimated operations and maintenance (O&M) costs and proposed revenues. All increases in O&M costs will result from the LPA and there will be no additional O&M costs as a result of LRCIs.

7.2.1 Operations and Maintenance Costs

Operating and maintenance cost estimates of the 2040 No Build Alternative and LPA were generated by using the same methodology presented in the *Southwest Light Rail Transit (LRT) Service Plan Updates and Operations and Maintenance Cost Results for the Final EIS* (July 2015), with the addition of the METRO Blue Line extension and METRO Orange Line (bus rapid transit – BRT)². Table 7.2-1 presents estimates of No Build Alternative and LPA operating and maintenance cost estimates in 2040 dollars based upon an inflation rate of 3.15 percent. In 2016 dollars, the annual incremental systemwide O&M cost with the LPA is estimated to be \$39.45 million more than it would be under the No Build Alternative, increasing from approximately \$661.54 million to \$700.1 million (see Section 2.4). In YOE dollars, O&M costs for the LPA are estimated to be approximately \$83.1 million higher than under the No Build Alternative, increasing from approximately \$1,392.59 million to \$1,475.63 million (see Table 7.2-1).

TABLE 7.2-1

Annual Systemwide Operations and Maintenance Costs in 2040: No Build Alternative and LPA (2040 dollars, in millions)^a

Operator/ O&M Cost Category	No Build Alternative ^b	LPA ^c
Metro Transit/Metropolitan Transportation Services^d		
Light Rail	\$188.13	\$246.00
Bus	\$979.81	\$984.66
Northstar	\$39.86	\$39.86
Paratransit (Metro Mobility and Transit Link)	\$147.32	\$147.32
Subtotal	\$1,355.12	\$1,417.84
SouthWest Transit		
Bus	\$37.461	\$57.792
Subtotal	\$37.461	\$57.792
Systemwide		
Total (all modes)	\$1,392.59	\$1,475.63

^a Source: Council, Metro Transit Finance Department, Financial Management Plan, Revision 02-00, August 2015.

^b The No Build Alternative includes the METRO Blue Line extension and METRO Orange Line. O&M cost estimates for these two transitways are from Metro Transit Finance Department, Financial Management Plan, Revision 02-00, August 2015.

^c No additional O&M costs will be incurred as a result of LRCIs.

^d Includes all Twin Cities suburban transit authorities and contracted providers, except for SouthWest Transit, which is accounted for separately in the table.

Source: Southwest LRT Financial Analysis in Support of the Final EIS, September 2015. Escalated 3.15 percent annually.

7.2.2 Operating Revenues

Operating revenues come from various sources are described below and summarized in Table 7.2-2. The transit operating revenues under the LPA³ would include fare revenues, state general funding, and CTIB funding. The funding for the O&M costs for the LPA comes first from the fare revenues, the remaining costs

² The No Build Alternative includes the METRO Blue Line extension and METRO Orange Line. O&M cost estimates for these two transitways are from Metro Transit Finance Department, Financial Management Plan, Revision 02-00, August 2015.

³ Applies to LRT O&M costs only.

are split 50 percent state general funds and 50 percent CTIB. Minnesota Sessions Laws (2008) Section 473.4051 subd. 2 states that after operating revenue and federal money have been used to pay for light rail operations, 50 percent of the remaining balance must be paid by the State of Minnesota (Minnesota Session Laws, 2008, Regular Session, Chapter 365 – House File No. 4072). State funding for transit operations is derived from general fund appropriations, and is appropriated by the state legislature on a biennial basis.

TABLE 7.2-2

Annual Systemwide O&M Revenue in 2040: No Build Alternative and LPA (2040 dollars, in millions)

Operator Operating & Maintenance Cost and Revenue Category	No Build Alternative	LPA
Metro Transit/Metropolitan Transportation Services ^b		
Total O&M Cost	\$1,355.12	\$1,417.84
Revenue		
Fares	\$314.17	\$336.86
Motor Vehicle Sales Tax	\$779.30	\$779.30
CTIB	\$57.90	\$76.83
Other Revenue	\$18.29	\$19.36
Local Operating Assistance	\$5.25	\$5.25
Federal Operating Assistance	\$15.24	\$15.24
State Operating Assistance	\$164.92	\$183.85
Interest on Operation Balance	\$1.13	\$1.13
Total Metro Transit Revenue^c	\$1,355.12	\$1,417.84
SouthWest Transit		
O&M Cost	\$37.46	\$57.79
Revenue^d		
Fares	\$10.22	\$15.66
Motor Vehicle Sales Tax	\$24.73	\$24.74
Advertising and Concessions	\$0.35	\$0.35
Interest on Investments	\$0.03	\$0.03
Miscellaneous Other	\$0.07	\$0.07
Other Regional Revenue Source to be Determined	\$2.06	\$16.94
Total SouthWest Transit Revenue	\$37.46	\$57.79
TOTAL METRO TRANSIT/MTS/SOUTHWEST TRANSIT COSTS AND REVENUES	\$1,392.59	\$1,475.63

^a No additional O&M costs will be incurred as a result of LRCIs.

^b Includes all Twin Cities suburban transit authorities and contracted providers, except for SouthWest Transit, which is accounted for separately in the table.

^c Source: Council, Metro Transit Finance Department, Financial Management Plan, Revision 02-00, August 2015. Figures shown have been rounded.

^d Source: Southwest LRT Technical Report, Service Plan Updates, and O&M Cost Results for the Final EIS, July 2015.

Source: Southwest LRT Technical Report, Financial Analysis in Support of the Final EIS, August 2015.

7.2.2.1 Fare and Motor Vehicle Sales Tax Revenues

Fare revenues are received from the passengers for the use of the service. Ridership is anticipated to grow along with increasing population and employment in the corridor. The average operating revenue per passenger including cash fare and convenience fare such as 31-day pass revenue was \$0.96 for an LRT passenger, \$3.04 for a Northstar commuter rail line passenger, and \$1.14 for a bus passenger (including express bus premiums) in 2014. Metropolitan Council's policy is to increase fares by 10 percent whenever

inflating costs cause the farebox recovery ratio to drop below 28.5 percent.⁴ In October 2008, the Metropolitan Council implemented a fare increase in accordance with this policy; the base fare was increased to \$1.75, where it is today. Motor Vehicle Sales Tax (MVST) revenues are the largest source of local transit operating funds, accounting for approximately 36 percent of operating revenues in 2014.

7.2.2.2 Counties Transit Improvement Board Operating Funding

The CTIB, as described above under the Capital Plan Sources, has agreed to provide 50 percent of the net operating assistance required for the METRO Blue Line and METRO Green Line and Southwest LRT (METRO Green Line Extension), and 41.95 percent for the Northstar commuter rail line that began revenue service in November 2009.

7.2.2.3 Other Transit Related Operating Revenue

Historically, the Council has received other transit-related revenues that are generated by or for transit operations, which consist of advertising revenue, contract revenue, and other miscellaneous sources. These other transit-related revenues are projected to grow over time in proportion to the projected growth in transit operations.

7.2.2.4 State Operating Revenue

State funding for transit operations is derived from general fund appropriations and is appropriated by the state legislature on a biennial basis.

7.2.2.5 Federal Operating Revenue (FTA Section 5307 Urbanized Area Formula Grants)

Federal Operating Revenue (FTA Section 5307 urbanized area formula grants) is based on various demographic statistics, level of service, ridership, and operating cost variables. Factors in the formula that allocate grants to urbanized areas were estimated based on annual growth in total Moving Ahead for Progress in the 21st Century Act (MAP-21), Section 5307 funds.

MAP-21 limits the application of these Section 5307 grants to capital purposes, but an exception is made for maintenance expenses that protect the system's assets in the operating budget. One percent of these grants must be applied for "enhancements" as defined in the statute. The Financial Plan assumes that these grants are applied to preventative maintenance or to the agency-wide capital plan.

7.2.2.6 Interest Income

Interest income is derived from the interest earned on available funds at existing interest income rates.

7.3 Risk Analysis

The following three scenarios were tested in order to determine the ability of the region to withstand negative circumstances during the construction of the Southwest LRT Project. The detailed cash flows for each scenario are included as Appendices D, E, and F of the Project's Finance Plan (Council, August 2015). These can be compared to the base financial plan projection set on page 45 of the Project's Finance Plan. Across all scenarios, it is noteworthy that the financial structure of the Metropolitan Council Transportation Division and the Southwest LRT Project are dynamically resilient. The Southwest LRT Project is anticipated to be funded by local partners and the state in proportions of the non-Federal share. Furthermore, the Northstar, METRO Blue Line, METRO Green Line, and Southwest LRT operating cash flows are insulated from risk, because the operating deficit is anticipated to be funded by CTIB and the state. Similarly, the Opt Out program (systems that have elected to operate their own transit) present no financial risk to the Council. Even Metro Transit Bus, which is partially dependent on the Council's dedicated MVST funding, has been insulated by the Council's policy that the fares will be increased based on the farebox recovery ratio. This resilience is demonstrated in the aggressive tests of the plan in the following sections.

⁴ Farebox recovery ratio is the fraction of operating expenses which are met by the fares paid by passengers. It is computed by dividing the system's total fare revenue by its total operating expenses.

7.3.1 Scenario 1: Higher Than Expected Operations Inflation

This scenario tests the critical sector of Metro Transit's financial statements: its operating cash flows and reserves. Inflation of 3.5 percent per annum is applied to all operating expenses, instead of the 3.15 percent used in the project cost forecasts. As described above, the external funding for the Southwest LRT and the regional capital funding for the capital renewal and replacement program provide funding for these programs in case of cost increases; however, the Transportation Division's operating cash flows, particularly for the bus and Metropolitan Transit Services programs are more critical.

As stated previously, fare increases were assumed to be in 2017, 2019, 2021, 2024, 2028, and 2032. With the Operations Inflation Scenario, fare increases are assumed to be in 2017, 2019, 2021, 2023, 2026, 2030, and 2033. Furthermore, in the case of the transitway deficits, the state and CTIB operating assistance increase to exactly offset the increased deficit. However, we have assumed the MVST, federal section 5307 formula funds, and other operating revenue (primarily advertising and contract service) are not affected by the higher inflation. The final ending cash balance is reduced from \$792.64 million in the base case to \$540.97 million in this scenario.

Over the 21-year forecast period, total operating expenses increase by \$515.49 million. This is offset by \$184.80 million in passenger fares, state operating assistance of \$28.95 million, CTIB assistance of \$47.23 million, and local transitway assistance of \$2.84 million. At the end of 2035, the surplus generated by Operations is \$251.67 million lower than in the base case, but net revenues still exceed net expenses by \$540.97 million during the forecast period.

7.3.2 Scenario 2: Lower Than Expected MVST Receipts

This scenario assumes that motor vehicle sales tax will be below the current forecast. The current forecast is for MVST receipts to grow at 4.90 percent per annum, and for this scenario that rate has been dropped to 3.75 percent. Southwest LRT, METRO Blue Line LRT, and METRO Green Line LRT have their operations funded through farebox, State Appropriations, CTIB, and Local Operations Assistance. Bus operations and Northstar are funded through a combination of farebox, State Appropriation, and MVST. The reduction in MVST would not have any offset from any of the other sources. This scenario does not assume any additional new sources of revenue.

Over the 21-year forecast period, MVST is reduced by \$494.32 million. At the end of 2035, the surplus generated by Operations is \$494.32 million lower than in the base case, but net revenues still exceed net expenses by \$178.13 million for the forecast period. The final ending cash balance is reduced from \$792.64 million to \$298.32 million.

7.3.3 Scenario 3: Lower Than Expected Regional Property Tax Revenue

This scenario tests the Regional Property Tax Revenue Transit Asset Program. The Council levies a regional property tax, which is dedicated to funding a debt financed capital program. The outstanding debt in the program is serially financed and current debt service requirements are met from the property tax revenues. The net proceeds from the debt program are dedicated to funding the transit infrastructure programs and are shown in the cash flow projections as Regional Bonding. The current forecast is for Regional Property Tax Revenue to grow at 3.3 percent per annum, and for this scenario that rate has been dropped to 2.3 percent. The reduction in Regional Property Tax Revenue would not have any offset from any other source of revenue and will only impact the Capital Sources of Funds for the other capital programs, including Bus, METRO Blue Line, METRO Green Line, and Northstar. This scenario does not assume any additional new sources of revenue.

Over the 21-year forecast period, total capital sources of funding from Regional Bonding are decreased by \$104.99 million and Interest on Capital Balances by \$5.99 million. At the end of 2035, the surplus generated by capital cash balances is \$110.98 million lower than in the base case, but net capital sources of revenues still exceed capital expenses with a final ending cash balance of \$359.33 million. This will allow the Council to maintain and improve their Capital Improvement Program. This includes capital investments to assure that fixed assets remain in a state of good repair, the fleet is replaced in accordance with the fleet

management program, technological and other improvements are made to maintain and improve operating efficiency and effectiveness, and customer service and convenience is maintained and improved.

7.4 New Starts Rating

The Council is intending to seek Capital Investment Grant (CIG) Program funding from FTA for one or more of the alternatives examined in this NEPA document. The CIG program, more commonly known as the New Starts, Small Starts, and Core Capacity program, involves a multi-year, multi-step process that project sponsors must complete before a project is eligible for funding. The steps in the process and the basic requirements of the program can be found on FTA's website at <https://www.fta.dot.gov/>.

FTA must evaluate and rate proposed projects seeking funding from the CIG Program under a set of project justification and local financial commitment criteria specified in law. The criteria evaluate the merits of the project and the project sponsor's ability to build and operate it as well as the existing transit system. FTA assigns ratings from low to high based on information that project sponsors submit on the project cost, benefits, requested amount of CIG Program funds, and overall financial plan. Projects must receive a medium or better overall rating to advance through the steps in the process and be eligible for funding from the program. As projects proceed through the steps in the process, information concerning costs, benefits, and impacts is refined and the ratings are updated to reflect new information. Changes in federal law instituted by the Moving Ahead for Progress in the 21st Century Act (commonly known by the abbreviation MAP-21) will require FTA to evaluate and rate the project for federal funding after the completion of the NEPA process.

As reported in the *Proposed Allocation of Funds for Fiscal Year 2016: Capital Investment Grant Program (New Starts, Core Capacity and Small Starts)* (FTA, 2016), FTA has rated the Project as follows: Overall Project Rating = Medium-High; Project Justification Rating = Medium; and Local Financial Commitment Rating = Medium-High.

8 Evaluation of Alternatives

This chapter evaluates the effectiveness of the No Build Alternative and the Southwest Light Rail Transit (LRT) Project (the Project) based on the information contained in Chapters 2 through 7. The comparison of these alternatives is based on the Project's Purpose and Need Statement as described in Chapter 1. This chapter includes the following sections:

8.1 Effectiveness in Meeting the Project Purpose and Need

8.2 Environmentally Preferred Alternative

The evaluation in this chapter differs from the evaluation in Chapter 11, Evaluation of Alternatives, of the Draft Environmental Impact Statement (EIS) in that this evaluation focuses on the ability of the Project and No Build Alternative to meet the Purpose and Need. This chapter does not include a discussion of each alternative's attainment of broader goals and objectives and cost-effectiveness that was included in the Draft EIS. These considerations were primarily used and presented in the Alternatives Analysis and the Draft EIS to support the identification of the Locally Preferred Alternative (LPA) and to compare the LPA with other alternatives being evaluated.

8.1 Effectiveness in Meeting the Project Purpose and Need

As presented in Chapter 1, the proposed Project is intended to improve transit service in the Southwest LRT Corridor by addressing the deficiencies and needs that have been identified. The following discussions analyze the effectiveness with which the No Build Alternative and Project address the Corridor needs and achieve the intended Purpose of the Southwest LRT Project, which is as follows:

- The Southwest LRT Project will improve access and mobility to the jobs and activity centers in the Minneapolis central business district, as well as along the entire length of the Corridor for reverse-commute trips to the expanding suburban employment centers.
- The Southwest LRT Project will provide a competitive, cost-effective travel option that will attract choice riders to the transit system. The competitive and reliable travel time for the Southwest LRT Project is attributed to the diagonal nature of the line compared to the north-south/east-west orientation of the roadway network and to the increasing levels of congestion of the roadway network.
- The Southwest LRT Project will be part of the region's system of transitways integrated to support regional transportation efficiency. Since the late 1990s, the Southwest LRT Project has been identified by the Metropolitan Council (Council) as warranting a high level of transit investment to respond to increasing travel demand in a highly congested area of the region. Due to congestion levels on the roadway network, speed and use limitations of the shoulder bus operations, and capacity constraints in downtown Minneapolis, a bus option is limited in its ability to adequately serve the travel demand and to provide reliable travel times.

8.1.1 Improve Access and Mobility to Jobs and Activity Centers for Commuters and Reverse Commuters

The first purpose of the Project is to improve access and mobility to the jobs and activity centers that are: (1) in the Minneapolis central business district; and (2) along the entire length of the Corridor (i.e. for reverse-commute trips to the expanding suburban employment centers).

Exhibit 1.4-5 illustrates the existing concentration of employment within the Project Corridor, with employment activity centers in Eden Prairie, Minnetonka, Hopkins, and St. Louis Park – and within the Minneapolis central business district, which is and will remain the highest concentration of employment in the region. Reflecting regional and local land use and development goals and objectives of increasing employment concentrations within a variety of activity centers outside of central Minneapolis, employment in the Corridor is expected to increase by 36 percent from 2010 to 2040. In Eden Prairie, Minnetonka and Hopkins, which represent much of the Corridor's reverse commute market, employment is projected to increase from 30 percent, 43 percent, and 44 percent, respectively.

The current bus service in the Corridor is predominantly inbound (eastbound) from suburban areas during the morning peak period and outbound (westbound) to the suburban areas during the evening peak period. Eastbound service in the morning to downtown Minneapolis and westbound service in the evening from Minneapolis is much more frequent than the reverse-commute service. For example, there are over six times as many buses traveling from downtown Minneapolis into the Corridor during the evening peak hour than there are serving the reverse commute. Further, many of the transit connections between the Corridor's activity centers do not provide direct connections and instead require circuitous routes and/or transfers, especially in the reverse-commute direction.

8.1.1.1 No Build Alternative

The No Build Alternative would not add light rail or other high capacity transit service into the Southwest LRT Project Corridor and thus would not meet this purpose. Under the No Build Alternative, the bus network would see relatively minor changes in its service delivery and structure (see Exhibit 4.1-4). While transit vehicle hours and miles would increase by approximately 1 percent per year under the No Build Alternative, much of that increase would be devoted to allowing for increased bus travel times due to increased congestion.

Under the No Build Alternative, there would not be a substantial increase in either the quantity or quality of transit service between the Corridor and the Minneapolis central business district in either the commute or reverse-commute directions. Only four existing bus routes would see major service and/or routing changes. Further, there would be only one new crosstown route, which would connect areas of Eden Prairie, Minnetonka, and Hopkins. That new crosstown bus route would be relatively infrequent and, because of the circuitous and congested street network on which it would operate, it would have relatively long transit travel times between the activity centers. As a result, the No Build Alternative would not improve mobility and access for either Corridor commuters to the Minneapolis central business district or for reverse commuters destined for Corridor employment centers south and west of central Minneapolis.

8.1.1.2 Project

The Project will introduce new light rail service that will meet both elements of this project purpose. First, the Project's proposed light rail extension will connect residential areas throughout the Corridor to employment and activity centers in the Minneapolis central business district. The light rail extension, including its connecting feeder bus service and new park-and-ride lots, will substantially improve both access and mobility to those centralized jobs and activity centers. Further, by providing one-seat rides to the existing METRO Green Line, the Project will extend the improved access and mobility to include other employment and activity centers, such as the University of Minnesota and the St. Paul central business district.

Second, the Project will substantially increase access and mobility to jobs in the Corridor that are west and south of the Minneapolis central business district. Those reverse-commute trips will see substantial increases in the delivery and quality of transit service. In general, the frequency of service for reverse-commute trips on the proposed light rail extension will be the same as for commute trips, thereby providing increased transit access. Further, transit travel times for reverse-commute trips via the new light rail service will tend to be substantially reduced, compared to existing and 2040 travel times under the No Build Alternative. In addition, those reverse-commute transit travel times will be much more reliable, because the light rail service will not operate on congested roadways and it will be less likely to be impeded by adverse weather affecting roadways. Those improvements in transit travel times and reliability will substantially improve mobility for reverse-commute trips.

8.1.2 Attract Choice Riders to the Transit System by Providing a Competitive, Reliable, Cost-effective Travel Option

The second purpose of the Project is to attract choice riders to the transit system by providing a competitive, reliable, cost-effective travel option in an area of the region that is experiencing congested roadway connections. In particular, the intent of this purpose is to efficiently attract new choice riders to the transit system by: (1) providing a new diagonal transitway that augments the north-south/east-west orientation of

the existing roadway network, thereby reducing transit travel times in the Corridor, especially between the major activity centers; and (2) grade separating that transitway from the increasingly congested regional and local roadway network, thereby increasing the speed and reliability of transit service in the Corridor.

Regional highways in the Corridor are laid out in a grid pattern, which requires express bus service using them to travel north or south and then east or west to connect activity centers that are situated in a southwest to northeast orientation. At the local level, much of the roadway network through this area is circuitous due to geographic constraints, such as lakes and freight rail alignments, and there are several one-way street operations. Unlike streets on a standard grid, circuitous streets tend to require buses to frequently turn at intersections. Turning buses are generally slower and require slightly more intersection capacity. One-way street networks can make it difficult for bus riders to locate stops for a return trip, and buses traveling through one-way street systems are often required to take a circuitous route, which adds distance to every trip.

This purpose also recognizes the link between increased congestion and the deterioration in the competitiveness of bus transit to attract choice riders. Most importantly, transit travel times tend to increase at a greater rate than automobile travel times in response to the same congested roadway network. Further, the number and frequency of accidents tends to increase with growing congestion, which leads to additional congestion. Between 2010 and 2040, daily vehicle trips in the region will increase by 28 percent and, as a result, congestion is forecast to worsen by 2040. With the expected traffic increases caused by population and employment growth and few roadway capacity increases due to funding constraints, the Corridor will experience more intense and more extensive congestion on the region's regional highways and local streets. Exhibit 4.2-2 illustrates the substantial increase in congested principle arterials that will occur by 2040.

8.1.2.1 No Build Alternative

The No Build Alternative would not introduce a new travel option to attract new choice transit riders, and thus it would not meet either of the two elements of this purpose. First, the No Build Alternative would not introduce a new diagonal transitway into the Corridor and thus transit travel times in the Corridor would not become more competitive. Instead, bus service in the Corridor would continue to operate on the north-south and east-west street grid or on the circuitous local roadway network. Second, bus service in the Corridor under the No Build Alternative would continue to use local roads and regional highways that will become increasingly congested. Congested roadways and intersections will result in longer delays for both automobile traffic and bus transit. Compared to today, Corridor transit travel times under the No Build would tend to increase and transit reliability would tend to decrease. Most importantly, buses in the Corridor would tend to have either no or reduced competitive advantages in travel time or reliability relative to automobiles, which would also be true for buses that use the regional highway network because of the speed and use limitations of the shoulder bus operations. As traffic volumes exceed the capacity of roadways and intersections along the Corridor, travel times will increase. Longer traffic delays and reduced transit service reliability would be detrimental to the quality of life of residents and employees in the Corridor.

8.1.2.2 Project

The Project will meet the second purpose of attracting choice riders to the transit system in a cost-effective manner by: (1) providing a new diagonal transitway that reduces transit travel times in the Corridor, especially between the major activity centers and especially in the reverse commute direction; and (2) grade separating that transitway from the increasingly congested regional and local roadway network, thereby increasing the speed and reliability of transit service in the Corridor. In particular, the Project will introduce a grade-separated diagonal transitway in the Corridor that will: reduce transit travel times; improve transit reliability; increase the overall transit demand; and increase transit's mode share. That is, the new light rail transit service introduced in the Corridor by the Project will provide a competitive and reliable transit option that will attract choice riders.

Except for at-grade light rail crossings of streets, the new light rail service will operate within exclusive transit right-of-way, which will separate the light rail service from the slowing and reliability-reducing effects of congestion. Under the Project, approximately one-third of the passenger miles within the Corridor will occur within that exclusive transit right-of-way, generally unaffected by roadway congestion and

deteriorating speeds over time. Transit travel time improvements of the Project over the No Build Alternative reflect greater efficiency and reliability of transit service offered by the Project, as it would be able to adhere more strictly to its operations schedule and provide more predictable travel times, contrasted to bus service on more congested roadways under the No Build Alternative. As a result, the Project will attract those new choice transit riders in a more cost-effective manner, compared to the efficiency of Corridor bus network the No Build Alternative.¹

Because of its travel time and coverage advantages compared to the No Build Alternative, the Project is forecast to result in 13,240 new transit trips on an average weekday in 2040, compared to the No Build Alternative. Most of those new transit trips represent a shift from trips taken using a personal automobile. In total, the Southwest LRT Green Line Extension is forecast to carry 32,679 transit rides in 2040 on an average weekday. The increase in transit ridership under the Project reflects the demand for and attractiveness of faster and more reliable transit service in the Corridor.

8.1.3 Be Part of a System of Integrated Regional Transitways

The third purpose is to expand the region's system of integrated transitways into the Southwest LRT Project Corridor. This purpose reflects the regional goals and objectives of linking land use and transportation plans. The Council has determined that the Corridor warrants a high level of transit investment because of the population and employment growth that has and will continue to occur in the Corridor, especially within targeted activity centers, in response to local and regional land use plans. Those plans recognize that the existing and planned roadway network will become increasingly congested over time. Further, those plans recognize that the increasingly congested roadway network and the bus system that operates on it cannot adequately support those land use plans where concentrations of population and employment are targeted. Instead, the region is looking to the system of integrated regional transitways to supplement the roadway and bus networks with high capacity and high quality transit connections. The intent is to serve those targeted activity centers and their associated increases in travel demand with a system of fast and reliable transitways.

8.1.3.1 No Build Alternative

The No Build Alternative would not expand the region's system of integrated transitways into the Corridor where regional and local land use plans have targeted major job and activity centers. Therefore, the No Build Alternative would not meet the purpose of expanding the region's integrated transitway into the Corridor.

Instead, the Corridor would be connected to that regional transitway system through a bus network that would be substantially similar to the existing bus network – buses operating on increasingly congested regional and local roadways. Thus, transit access and connectivity between the Corridor bus system and the regional transitway system would generally remain the same or worsen due to the impact of increased traffic congestion on transit access times. Bus capacity constraints within downtown Minneapolis would limit the region's ability to expand transit service capacity linking the Corridor to the other regional transitways. As such, and as described in Section 3.1, the No Build Alternative is not compatible with or is neutral in its support of many local, Hennepin County, Council, and Minnesota Department of Transportation land use and transportation plans that have been developed or amended to specifically include or reflect the introduction of light rail service into the Corridor and the associated changes to land use sustained by transit investment.

8.1.3.2 Project

The Project will meet this purpose through its expansion of the region's integrated transitways into the Corridor. Specifically, the Project will extend the existing METRO Green Line light rail service into the Corridor with approximately 14.5 miles of grade-separated right-of-way and 16 new light rail stations. That expansion of the regional transitway system into the Corridor will replace much of the No Build Alternative's reliance on the local bus network to provide that connection.

¹ For example, the Project will attract more new Corridor transit trips per new hour and mile of transit service than the number of Corridor transit trips per hour and mile of transit service under the No Build Alternative. New Project transit trips and hour/miles of service are compared to the No Build Alternative.

The long-range comprehensive land use and transportation plans for the Twin Cities region both call for continued investment in a system of regional transitways, including the Southwest LRT Project. As described in the plans, the region's investment policy includes land use development expectations to leverage and support its transit investments, identifying cost-effective means of improving multimodal access to regional destinations, and improving mobility and reliability on the regional highway system. Further, the Project's proposed light rail stations are expected to experience additional mixed-use development, compared to the No Build Alternative. The expected increase in development density around light rail stations resulting from the construction of the Project is consistent with regional and local plans. These plans acknowledge the value of extending the regional transitway into the Corridor as an important way to support efficient land use development.

8.2 Environmentally Preferred Alternative

The National Environmental Policy Act (NEPA) requires that, in cases where an EIS has been prepared, the Record of Decision (ROD) must identify all alternatives that were considered, specifying the alternative or alternatives that were considered to be environmentally preferable (40 Code of Federal Regulations [CFR] 1505.2(b)). The environmentally preferable alternative or alternatives is the alternative or alternatives that would promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative or alternatives that cause the least damage to the biological and physical environment and the alternative(s) that best protects, preserves, and enhances historic, cultural, and natural resources.

The Draft Environmental Impact Statement's evaluation of alternatives preliminarily found that LRT 3A (relocating existing freight rail service from the Kenilworth Corridor) was the Project's environmentally preferred alternative and that LRT 3A-1 (co-location) would "fail to rise to the environmentally preferred alternative" (see Chapter 11 of the Draft EIS, p. 11-12).

As noted in Section 2.5 of the Supplemental Draft EIS, the findings reached in the design adjustment process that occurred after publication of the Draft EIS led to adjustments to the Locally Preferred Alternative, with the retention of freight rail in the Kenilworth Corridor (LRT 3A-1). In April 2014, the Council identified the design adjustments to be incorporated into the Project: the Shallow LRT Tunnels – Over Kenilworth Lagoon (which will include co-location of light rail and freight rail in the Kenilworth Corridor – LRT 3A-1). In summary, the Council found that, relative to the other options considered, the Shallow LRT Tunnels – Over Kenilworth Lagoon (LRT 3A-1) would provide the best balance of costs, benefits, and environmental impacts, and in doing so found that it would best meet the Project's Purpose and Need (see Chapter 1). In particular, the Locally Preferred Alternative with the Shallow LRT Tunnels – Over Kenilworth Lagoon (LRT 3A-1) will:

- Result in less harm to Section 4(f)-protected properties (compared to the displacement of the Park Spanish Immersion School playground with freight rail relocation)
- Include the Southerly Connector replacing the Skunk Hollow switching wye that will facilitate freight rail movements
- Minimize the reconstruction of freight rail tracks and related adverse impacts
- Include design refinements that will help avoid diminishing the potential for TOD around light rail stations in close proximity of freight rail tracks
- Provide safe and convenient pedestrian crossings of freight rail tracks at the proposed Wooddale, Beltline, and 21st Street stations
- Avoid the displacement of residents and businesses in St. Louis Park and Minneapolis (compared to the full acquisition of approximately 32 residential, commercial, and institutional parcels under freight rail relocation)
- Include bicycle and pedestrian improvements and the study of potential traffic-related improvements that will improve access to light rail stations and across the light rail and freight rail alignment in the Kenilworth Corridor (compared to the construction of a berm for the freight rail alignment in St. Louis Park that would tend to divide a residential and commercial neighborhood)

- Permanently displace approximately six fewer acres of wetland

As a result of the design adjustments that occurred after publication of the Draft EIS, the co-location of light rail and freight rail in the Kenilworth Corridor (LRT 3A-1) is the Project's environmentally preferred alternative.²

² In addition, through the Section 404 wetland permit process, the U.S. Army Corps of Engineers has preliminarily determined that, compared to the relocation of freight rail (LRT 3A), the co-location of freight rail and light rail in the Kenilworth Corridor (LRT 3A-1) is the Least Environmentally Damaging Practicable Alternative (LEDPA). See Section 3.9 for additional information on the Section 404 wetland permit process and documentation and the U.S. Army Corps of Engineers' preliminary LEDPA determination.

9 Public and Agency Coordination

This chapter provides an overview of public and agency coordination activities performed during the National Environmental Policy Act (NEPA)/Minnesota Environmental Policy Act (MEPA) process for the Southwest Light Rail Transit (LRT) Project (the Project). This chapter also addresses the Project's advisory committee structures; agency participation; coordination activities, public meetings and events; and other information-dissemination activities implemented during the Project Development and environmental processes. Finally, this chapter summarizes public and agency comments received during the Draft and Supplemental Draft Environmental Impact Statement (EIS) public comment periods, as well as permits and approvals that will be required to implement the Project.

This chapter includes the following sections:

- 9.1 Public Involvement
- 9.2 Advisory Committees
- 9.3 Agency Coordination
- 9.4 Summary of Public and Agency Comments on the Draft EIS and Supplemental Draft EIS
- 9.5 Permits and Approvals Required

The Project has an extensive history of outreach and collaboration with the affected public throughout the corridor. The outreach process began with Hennepin County Regional Railroad Authority (HCRRA), which was the Project's local lead agency for the environmental process through the Draft EIS. Outreach responsibilities were transferred to the Metropolitan Council (Council), which became the local lead agency for the environmental process upon completion of the Draft EIS public comment period.

The Project's public and agency plans and activities have been developed and implemented in compliance with the Transportation Equity Act for the 21st Century (TEA-21), enacted in 1998; the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005; MAP-21; Title VI of the Civil Rights Act of 1964, Federal Transit Administration (FTA) Circular, *FTA C 4702.1B, Title VI Requirements and Guidelines for Federal Transit Administration Recipients*, effective October 1, 2012 (Title VI Requirements and Guidelines Circular); and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (Clinton, 1994), including the United States Department of Transportation (USDOT) *Final Environmental Justice Order (Order 5610.2(a): Actions to Address Environmental Justice in Minority Populations and Low-Income Populations)*, updated May 2, 2012; and the FTA Circular, *FTA C 4703.1, Environmental Justice Policy Guidance for Federal Transit Administration Recipients*, effective August 15, 2012 (Environmental Justice Circular [FTA, 2012a]).

Outreach activities, agency coordination, and committee structure evolved as Project Development activities progressed. Public and agency coordination activities were consistent with the NEPA and the MEPA, Chapter 4410 Environmental quality Board (EQB) Environmental Review Program. Publications of notices of intent, document availability, public comment periods, and public open houses and hearings, were published in the *Federal Register* and the *EQB Monitor*. Requirements regarding the timing and length of public comment periods, as well as when public open houses and hearings could be held relative to publication of environmental documents were also consistent with NEPA and MEPA.

9.1 Public Involvement

This section provides an overview of the public involvement activities associated with the preparation of the Draft EIS, Supplemental Draft EIS, and Final EIS. Ongoing engagement and communication with the affected public has been a fundamental element of the Southwest LRT Project since its initiation. Maintaining an open dialogue and offering opportunities for input and discussion—especially related to the identified technical issues and items of concern to the affected public—will continue to be a key component of Project implementation.

9.1.1 Public Involvement for Project Scoping

Public involvement for the Project's environmental review process began with the Draft EIS scoping process, which informed the public, interest groups, affected tribes, and government agencies of the Draft EIS. The scoping process began with a notice in *Finance and Commerce* on August 23, 2008, and the publication of the Notice of Intent for the Draft EIS was published in the *Federal Register* on September 23, 2008 (FTA, 2008b), and in the *EQB Monitor* on September 8, 2008 (Minnesota Environmental Quality Board, 2008) (see Appendix G of this Final EIS). The notices announced the beginning of the Scoping Comment Period, which extended from September 8 to November 7, 2008, and included dates for three public Scoping Meetings/Hearings, can be found in the *Southwest LRT Community Events, Meetings, and Presentations Summary Report* listed in Appendix C. The process provided opportunities to inform the public, government agencies, elected officials, organizations, and businesses that development of the Draft EIS was commencing, and to solicit issues of concern.

A Scoping Information Booklet was prepared and distributed widely to inform the public about the Scoping Meetings; these booklets were translated into Hmong, Spanish, and Somali. Copies were made available on the Southwest Transit website and at all the Scoping Meetings. The booklet answered questions and presented information on a number of subjects, such as the how to participate in the scoping process. A *Scoping Summary Report*¹ that served as the Scoping Decision Document as defined in Minnesota Environmental Quality Board rules was completed in January 2009. The *Report* was amended in September 2012 to include impacts of relocation freight rail for the four build alternatives and include a co-location alternative where freight rail, light rail and the commuter bike trail share a common carrier between Louisiana Avenue and Penn Avenue. Notice of the Scoping Report amendment was published October 15, 2012 in the *EQB Monitor*.

9.1.2 Public Involvement Activities During the Draft EIS Public Comment Period

The FTA and HCRRA published the Draft EIS in October 2012 (HCRRA, 2012). The Notice of Availability was published in the *Federal Register* on October 12, 2012, and in the *EQB Monitor* on October 15, 2012. These notices were followed by a public comment period that concluded on December 31, 2012. Copies of the Draft EIS were available at the following locations for public review during the comment period:

- Hennepin County Housing, Community Works & Transit: 701 Fourth Avenue South, Suite 400, Minneapolis
- Southwest LRT Project Office: 6465 Wayzata Boulevard, Suite 500, St. Louis Park
- Libraries:
 - Eden Prairie: 565 Prairie Center Drive, Eden Prairie
 - Edina: 5280 Grandview Square, Edina
 - Franklin: 1314 East Franklin Avenue, Minneapolis
 - Hopkins: 22 11th Avenue North, Hopkins
 - Linden Hills: 2900 West 43rd Street, Minneapolis
 - Minneapolis Central: 300 Nicollet Mall, Minneapolis
 - Minnetonka: 17524 Excelsior Boulevard, Minnetonka
 - Sumner: 611 Van White Memorial Boulevard, Minneapolis
 - St. Louis Park: 3240 Library Lane, St. Louis Park
- City Halls:
 - Eden Prairie: 8080 Mitchell Road, Eden Prairie
 - Edina: 4801 West 50th Street, Edina
 - Hopkins: 1010 1st Street South, Hopkins
 - Minneapolis: 350 South 5th Street, Minneapolis

¹ Available at <http://old.swlrtccommunityworks.org/component/content/article/54.html> and <http://metro council.org/Transportation/Projects/Current-Projects/Southwest-LRT/Environmental/Scoping.aspx?source=child>

- Minnetonka: 14600 Minnetonka Boulevard, Minnetonka
- St. Louis Park: 5005 Minnetonka Boulevard, St. Louis Park

During the Draft EIS public comment period, the Draft EIS was available on Hennepin County's webpage and can now be found at <http://www.swlrt.org>. HCRRA also provided an Executive Summary document, *Southwest Transitway Draft Environmental Impact Statement Executive Summary* and a supporting guide, *Guide to Commenting on the Draft Environmental Impact Statement*. Both documents were provided in four languages: English, Spanish, Hmong, and Somali.

Public hearings on the Draft EIS were held on November 13, November 14, and November 29, 2012. Each public hearing was preceded by an open house. Over 400 people attended the public hearings. Translation services and Americans with Disabilities Act (ADA) accommodations were provided upon request. Substantive comments received during the Draft EIS public comment period and responses are included in Appendix L of this Final EIS.

9.1.3 Public Involvement for the Supplemental Draft EIS

After the close of the Draft EIS public comment period, the Council became the lead agency for the remainder of the Project's environmental process. Public involvement efforts continued and evolved as local lead agency responsibility shifted from HCRRA to the Council in January 2013. The Council continued to work with local public transportation agencies and local jurisdictions to implement a public involvement program in support of its effort to continue Project Development, as described in Chapter 2 of this Final EIS.

Following publication of the Draft EIS, the FTA and the Council determined design adjustments made to the Locally Preferred Alternative (LPA) had the potential to result in new adverse impacts that needed to be evaluated in a Supplemental Draft EIS (see Section 2.2). In May 2015, the FTA and the Council published the *Supplemental Draft EIS* (Council, 2015). The Notice of Availability was published in the *Federal Register* on May 22, 2015, and in the *EQB Monitor* on May 25, 2015. A notice extending the public comment period on the Supplemental Draft EIS to July 21, 2015 was published in the *Federal Register* on June 5, 2015; a notice extending the public comment period to July 21, 2015, was published in the *EQB Monitor* on June 8, 2015.

The Supplemental Draft EIS and supporting documentation are available on the Project website (<http://www.metrocouncil.org/swlrt/sdeis>). During the Supplemental Draft EIS public comment period, printed copies of the document and its supporting materials were available for review during regular business hours at the following locations:

- **Eden Prairie City Hall:** 8080 Mitchell Road, Eden Prairie
- **Eden Prairie Public Library:** 565 Prairie Center Drive, Eden Prairie
- **Minnetonka City Hall:** 14600 Minnetonka Blvd, Minnetonka
- **Minnetonka Public Library:** 17524 Excelsior Blvd, Minnetonka
- **Hopkins City Hall:** 1010 First Street South, Hopkins
- **Hopkins Public Library:** 22 Eleventh Avenue North, Hopkins
- **Edina City Hall:** 4801 West 50th Street, Edina
- **St. Louis Park City Hall:** 5005 Minnetonka Blvd, St. Louis Park
- **St. Louis Park Public Library:** 3240 Library Lane, St. Louis Park
- **Southwest LRT Project Office:** 6465 Wayzata Blvd., Suite 500, St. Louis Park
- **Minneapolis City Hall:** City Engineer's Office, 350 South Fifth Street, Room 203, Minneapolis
- **Minneapolis Central Library:** 300 Nicollet Mall, Minneapolis
- **Walker Public Library:** 2880 Hennepin Avenue, Minneapolis
- **Linden Hills Public Library:** 2900 West 43rd Street, Minneapolis
- **Sumner Public Library:** 611 Van White Memorial Blvd., Minneapolis
- **Franklin Public Library:** 1314 East Franklin Avenue, Minneapolis

- **Metropolitan Council Library:** 390 Robert Street North, St. Paul
- **Minnesota Department of Transportation Library:** 395 John Ireland Blvd., St. Paul
- **Minnesota Legislative Reference Library:** 645 State Office Building, 100 Rev. Dr. Martin Luther King, Jr. Blvd. St. Paul

The Council also provided a *Guide to the Supplemental Draft EIS*, which was intended to help the public locate information and submit comments on the Supplemental Draft EIS. The Guide was provided in four languages: English, Spanish, Hmong, and Somali.

Public hearings on the Supplemental Draft EIS were held on June 16, June 17, and June 18, 2015 (see details in the *Southwest LRT Community Events, Meetings, and Presentations Summary Report* listed in Appendix C). Each public hearing was preceded by an open house. Over 100 people attended the public hearings and open houses. Translation services and ADA accommodations were provided upon request. Substantive comments received during the Supplemental Draft EIS public comment period and responses are included in Appendix M of this Final EIS.

9.1.4 Accessibility to the Public

Public and agency coordination are managed by the Southwest LRT Project Office at 6465 Wayzata Boulevard, Suite 500, St. Louis Park, Minnesota 55426. The Project Office can be reached by telephone ([612] 373-3800), fax ([612] 373-3899), and email (swlrt@metrotransit.org). Media events, news releases, advisory and management committee agendas, presentations, meeting minutes, environmental documents and engineering plans are available on the Project website (<http://www.swlrt.org>). These materials and this Final EIS comply with the requirements of Minnesota Statutes 363A.42 regarding the accessibility of public records.

9.1.5 Communications and Public Involvement Plan

On July 22, 2013, the FTA issued a Notice of Intent to complete a Supplemental Draft EIS in the *Federal Register* (FTA, 2013) and the Council issued a Notice of Supplemental Draft EIS Preparation in the *EQB Monitor* (Minnesota Environmental Quality Board, 2013) to comply with MEPA. The Notice of Intent was also published in the *Star Tribune* on July 24, 2013. A comment period was held on the proposed scope of the Supplemental Draft EIS between July 22 and August 12, 2013. Comments on the scope of the Supplemental Draft EIS that were received during the MEPA comment period are documented in Appendix I of the Supplemental Draft EIS.

Chapter III of FTA's Environmental Justice Circular contains recommended strategies and techniques for ensuring that environmental justice populations have a voice in the decision making process and describes nontraditional outreach strategies and practical suggestions that may result in greater participation by environmental justice populations. The Project implemented these recommendations by conducting a strategic planning process and developing a *Communications and Public Involvement Plan* (CPIP) (Council, 2015a; see Appendix C for instructions on how to access the document) that includes a demographic analysis of the corridor (ethnicity, languages spoken, and income level). The CPIP identifies the following outreach strategies for engaging ethnic and low income populations:

- Providing translators at events and translating materials in languages other than English.
- Inviting community representatives to join the CAC and BAC.
- Proactively seeking opportunities to engage communities in dialogue about the Project.
- Establishing and maintaining connections between SPO outreach staff and community representatives.
- Reviewing efforts regularly for effectiveness.

In addition to traditional communication strategies, the Council established community and business advisory committees and hired outreach staff to attend neighborhood meetings, staff tables at community events, and meet with people one-on-one or in small groups. Chapter 5 of this Final EIS provides a summary of environmental justice-related public coordination activities performed by the Council to support publication of the Supplemental Draft EIS and Final EIS. The CPIP provides a summary of the outreach plans

to select an operations and maintenance facility (OMF) site and to accommodate and engage individuals with limited English proficiency.

The Council developed a CPIP that provides the structure for coordination between the Council, Project partners, and the public during the Project Development process, including the preparation of this Final EIS, to satisfy the requirements of NEPA and its implementing regulations. The CPIP supports the Project's *Agency Coordination Plan*, as updated by the Council. The CPIP also provides for compliance with the EQB Environmental Review Program, pursuant to MEPA and Minnesota Statutes, Section 116D.04. The goals of the CPIP are to:

- Develop and maintain public understanding of and support for the Project as an essential means to improve our transportation system and maintain regional competitiveness.
- Build mutual trust among the Council, Project partners, and the public by creating transparency through information-sharing and regular, clear, two-way communication about the Project with community members, residents, businesses, and interested groups in the corridor.
- Promote public involvement by providing opportunities for public participation and dialogue between the Council and the public.
- Maintain ongoing communication with Project partners and ensure that key messages are consistent, clear, and responsive to changing needs.
- Inform elected officials and funding partners about the Project's status, timing, and needs.
- Encourage meaningful public participation in the Project.
- Avoid schedule delays and cost increases due to misunderstanding of Project objectives or opposition to Project activities.

The CPIP identifies strategies for engaging the community during the decision-making process, including Project technical issues developed during Project Development. Section 6.1 of the CPIP identifies strategies for involving the public in Project technical issue resolution. This process is based on the level of public interest and type of input required. Considerations for involving the public include the mechanism by which the public provides input and how public input will be used in decision-making. The following subsections describe the Project team's organizational structure and the Project's advisory committees as documented in the CPIP.

9.1.5.1 Outreach and Communications Team

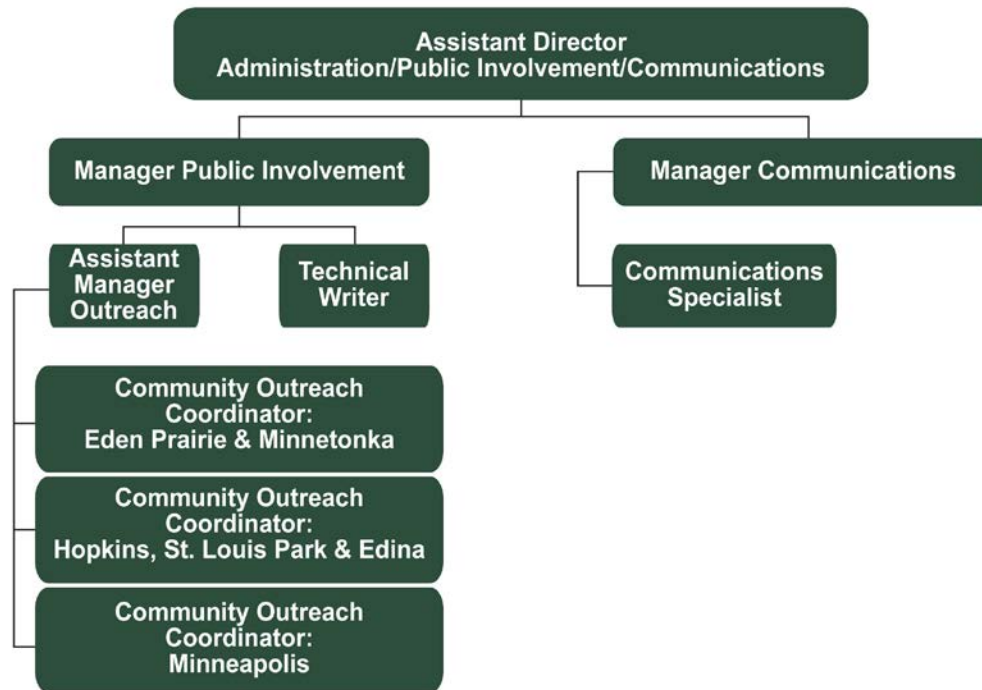
Project staff dedicated to communications and outreach includes the Assistant Director for Administration, Public Involvement and Communications; Communications Manager; Public Involvement Manager; Assistance Public Involvement Manager; Communications Specialist; three Community Outreach Coordinators; and a Technical Writer as shown on Exhibit 9.1-1. The efforts of the communications and public outreach staff are guided by the CPIP. The staff works closely with stakeholders, including several established stakeholder groups, to provide continuous engagement with the public as a part of the overall decision-making process.

9.1.5.2 Public Outreach and Events

Council staff hosted public events in locations throughout the Southwest LRT corridor to provide the public with the opportunity to provide input on Project design efforts and receive updates and information about Project activities. Public events were tailored to present information and solicit feedback on specific Project aspects, including: alignment options in Eden Prairie; station locations, design, and landscaping; freight rail alignment options in St. Louis Park and Minneapolis; and OMF site options. These public events offered an opportunity for the public to provide feedback on various features of the Project and make connections with Project staff. Project ideas and requests provided by the public were documented and considered in Project Engineering (see Chapter 2 of this Final EIS for more information on the Project Development process). Public events were typically conducted in an open house format and were publicized on the Project website and through newspaper articles, newspaper advertisements, press releases, social media, and email alerts.

EXHIBIT 9.1-1

Southwest LRT Project Communications and Public Involvement Staff



Advisory committee members also aided in promoting the public events in their communities. Public events were accessible to those with disabilities in accordance with ADA. Translation services and other accommodations were provided upon request. SPO selected meeting locations based on ease of access to the location and meeting room, and proximity to affected areas.

Lists of the public hearings, open houses, and community events held since the start of the EIS process can be found in the *Southwest LRT Community Events, Meetings, and Presentations Summary Report* listed in Appendix C.

In addition to hosting public open houses and other events, Project staff frequently attended and presented at community meetings throughout the Southwest LRT Project vicinity. Attending such meetings allowed groups with specific concerns or questions to interact with staff and to provide feedback in a more personal, less formal setting. Any concerns expressed at these meetings were shared with the appropriate team members.

9.1.5.3 Other Project Communication Strategies

The Southwest LRT Project conducted a wide variety of other Project activities used to help implement the Council's public involvement program in support of the effort to identify and evaluate potential adjustments to the Project. The *Southwest LRT Community Events, Meetings, and Presentations Summary Report* provides a list of meetings and events attended by staff from development of the Draft EIS through development of the Final EIS.

A. Project Website

HCRRA maintained a website (southwesttransitway.org, which is no longer active) during development of the Draft EIS; an archive of documents included on the HCRRA site is available at <http://www.swlrtccommunityworks.org/>. Upon completion of the Draft EIS, a new Project website was developed, which is part of the Council website and is available at <http://www.swlrtc.org>. The Council's Southwest LRT Project website serves as a communications forum and resource to the public, allowing stakeholders to keep informed about Project history, current activities and data, and upcoming milestones. The Council's website also provides information on the NEPA and MEPA processes, and offers downloads of

environmental documents, including the Scoping Summary, the Draft and Supplemental Draft EIS's, and public comments submitted on the Draft and Supplemental Draft EISs. On average, the Southwest LRT Project website received about 15,000 page views per month. Information posted on the Project website includes:

- Current Project status information and timeline
- Project facts and frequently asked questions
- LPA route information
- Information about the proposed stations
- Public meeting announcements and presentations
- Environmental process information
- Links to Project partners
- CAC, BAC, and CMC information and meeting documents
- Contact information, including community outreach coordinators and SPO information
- Southwest LRT Project announcements and newsletters
- Project funding information
- Project documents, including public and committee meeting documents, environmental documents, and other reports
- Route visualization video

B. E-list

Early during Project Development, the Council established a project “e-list,” which was used to send out newsletters, press releases, and meeting information. The ability to sign up for email updates was made available at public meetings held by the Project and on the Project website. The list currently has more than 4,000 subscribers.

C. Social Media

The Southwest LRT Project used Twitter to provide Project updates, including new website information, press releases, upcoming public meetings, Project visualizations, Project newsletters, and other Project-related material. The Council used its Twitter and Facebook account to share selected Southwest LRT Project information.

D. Newsletters

Through development of the Draft EIS, HCRRA published three editions of the Southwest Newslite newsletter. These newsletters were published at the following key times during Draft EIS development:

- Fall 2008: Launch of the Draft EIS Project phase
- Spring 2009: Completion of scoping; Next steps
- Fall 2009: Selection of LRT 3A as recommended LPA

Throughout the Project Development phase of the project, the Council published and printed a Southwest LRT Project newsletter, *Extending Tracks*. This was also published during preparation of the Supplemental Draft EIS and the Final EIS, as follows: The newsletter was produced in:

- March 2013
- May – June 2013
- July 2013
- December 2013
- Spring 2014
- Summer 2014
- Fall 2014
- Late 2014
- February 2015
- March 2015

- September 2015
- December 2015
- March 2016

These newsletters provided an additional resource to the public for the latest Southwest LRT Project news and announcements. Each newsletter was distributed electronically via GovDelivery, a digital communications platform and posted to the Southwest LRT Project website. The newsletters were also available at public meetings and public locations such as bus stops, as well as provided to project advisory and management committees.

E. Other Outreach Efforts

A variety of other Project communication activities were used by outreach staff, as needed. This included door-to-door outreach, such as distributing fliers for upcoming meetings or notifying property owners about right of entry required for field work. Targeted mailings were also used to notify stakeholders of upcoming meetings and notifications of field work.

Additionally, a variety of Project-specific print material were developed for this Project, including a project one-pager and fact sheets (e.g., relating to noise and vibration), frequently asked questions, and the *Field Guide to LRT Elements*. These materials were provided at project meetings and open houses.



Southwest LRT Project mobile office, which brings Project information to the community.

In 2014, a Southwest LRT Project mobile office was used at locations and events located throughout the project corridor. The mobile office is a Metro Transit bus reconfigured to bring information about the Project to the community in an effort to engage minority communities and other typically under-served communities. Mobile office hours were coordinated with events when applicable, during the day, as well as during evening and weekend hours. The intent of the mobile office is to provide community members with an opportunity to provide input without having to attend formal project meetings.

F. Media

Southwest LRT communication staff coordinate with nearly 100 local reporters who represent print, electronic, and television network media that are following the Project. News sources include city and neighborhood newspapers and minority and ethnic media sources. Project coordination with media includes media tours and press releases regarding upcoming project events, such as open houses and significant project milestones.

G. Corridors of Opportunity/Partnership for Regional Opportunity

The Council worked with and through an enterprise called Corridors of Opportunity, which ran from 2011 through the end of 2013. The Corridors of Opportunity's Community Engagement Team (CET) recommends grants to community groups that support innovative and effective place-based initiatives that engage and involve underrepresented communities (low-income, communities of color, immigrant communities, persons with disabilities) in participation, decision-making and leadership roles related to Southwest Corridor planning and implementation (<http://www.corridorsofopportunity.org/activities/engagement>). The Southwest LRT Corridor was one of seven Corridors of Opportunity projects within the region. Work performed by Corridors of Opportunity included outreach and engagement with Project communities, including underrepresented populations.

The CET identified and promoted existing community assets along the Southwest Corridor and worked to help ensure that communities in the Project vicinity were involved in the planning process. A list of CET grant recipients within the Southwest Corridor and the Project title for which the grant was provided is listed in Table 9.1-1.

TABLE 9.1-1

Corridors of Opportunity Community Engagement Team Recommended Grantees and Projects by Year

Grantee	Project Title	Year
Intercongregation Communities Association	Blake Road Neighborhood Discussion Circles	2011
New American Academy	SW Corridor Immigrant Opportunities Outreach and Engagement	2011
La Asamblea de Derechos-Civiles	Emancipation Campaign: Corridors to Freedom	2012
Centro de Trabajadores Unidos en la Lucha (CTUL)	Good Job Opportunities in Corridor Development	2012
Metropolitan Interfaith Council on Affordable Housing (MICA)	Interfaith Housing, Transit and Equitable Development Organizing	2012
New American Academy	N/A	2012

Source: <http://www.corridorsofopportunity.org/activities/engagement>.

The Project team invited groups that have received CET grants to have a representative participant on the CAC. Additional information about Corridors of Opportunity's work in relation to Southwest LRT Project is available on the Corridors of Opportunity website (<http://www.corridorsofopportunity.org/>).

In late 2013, the Corridors of Opportunity was renamed The Partnership for Regional Opportunity (the Partnership). This name change was intended to reflect the group's region-wide focus, extending beyond transitways. The Partnership's Policy Board, which adopted a new vision for its work, *Growing a prosperous, equitable, and sustainable region*, agreed to meet for one additional year through the end of 2014. The Partnership generally met on a monthly basis. The goals of the Partnership were to:

1. Improve the economic prospects of low-income people and low-wealth communities
2. Promote high quality development near existing assets (e.g., employment centers, transitways, and commercial and industrial corridors)
3. Advance a 21st century transportation system

Additional information about the Partnership is available here:

http://www.corridorsofopportunity.org/Corridors_News/partnership-regional-opportunity-corridors-opportunity-lives-2014.

H. Southwest LRT Transitional Station Area Action Plans

The Hennepin County Southwest LRT Community Works staff partnered with Council staff on the Transitional Station Area Action Plans (TSAAPs) planning effort for Southwest LRT communities. The objectives of TSAAPs were to address infrastructure, planning, and development needs at station locations to encourage area growth and a foundation for community planning when the Southwest LRT line opens. To create plans for prioritizing investment, TSAAP leaders reached out to the communities in the Southwest

LRT corridor to generate ideas and input. A community engagement plan was developed for the TSAAP process which included outreach methods to involve public participation and create comprehensive community plans. Information about TSAAPs, including the final report, completed in late 2013, is posted on Hennepin County's Community Works website (<http://www.swlrtcommunityworks.org/>).

9.2 Advisory Committees

This section summarizes the advisory committee structure used through development of the Final EIS. The discussion is divided into two parts—through development of the Draft EIS, during which time the advisory committee process was led by HCRRA; and through development of the Final EIS, during which time the advisory committee process was led by the Council. Meetings held between 2013 and 2015 for the Advisory Committees are included in *Southwest LRT Community Events, Meetings, and Presentations Summary Report*; instructions for how to access this report are in Appendix C.

9.2.1 Advisory Committees through the Draft EIS

HCRRA utilized three advisory committees through development of the Draft EIS. These committees are described in the following sections. For committees used during the Draft EIS and for other related County-led committees, see <http://www.swlrtcommunityworks.org/get-involved/committees-meetings/committees/>.

9.2.1.1 Southwest Policy Advisory Committee

The Southwest Transitway Policy Advisory Committee (PAC) was formed in 2002. This group provided policy oversight regarding major aspects of Project planning. The PAC was composed of representatives from key stakeholder groups including:

- Hennepin County, the lead agency
- Cities along the corridor
 - Eden Prairie
 - Minnetonka
 - Hopkins
 - Edina
 - St. Louis Park
 - Minneapolis
- Metropolitan Council
- Metro Transit
- SouthWest Transit
- Three Rivers Park District
- Midtown Community Works Partnership
- Cedar Lake Park Association
- Local chambers of commerce

9.2.1.2 Community Advisory Committee

The Southwest Transitway CAC was composed of residents appointed by neighborhood organizations or cities from along the Southwest Transitway corridor. CAC members helped inform community members about the Draft EIS process and key opportunities to provide input. The CAC also identified ways to reach out to their neighborhood groups and in some cases also served as liaisons to their neighborhoods.

9.2.1.3 Technical Advisory Committee

The Southwest Transitway Technical Advisory Committee (TAC) was composed of engineers and/or planners from each of the stakeholder cities, the Three Rivers Park District, SouthWest Transit, Minnesota Department of Transportation (MnDOT), the Council, and the Twin Cities and Western (TC&W) Railroad. In addition to advising the project team on the technical aspects of Southwest Transitway planning work for the Draft EIS, TAC members provided suggestions and support for the public outreach effort.

9.2.2 Advisory Committees from the Draft EIS through the Final EIS

After publication of the Draft EIS, the Council led the project's advisory committee process. The advisory committee structure was expanded since publication of the Draft EIS, with the addition of the Technical Project Advisory Committee (TPAC), the BAC, and the CMC during the Project Development phase. Exhibit 9.2-1 illustrates the key steps in the process used by the Council to make adjustments to the Project since publication of the Draft EIS.

EXHIBIT 9.2-1

Southwest LRT Project Advisory Committee Input to Decision Process



Between January 2013 and April 2014, after the close of the Draft EIS public comment period, the Council took action on the Project's scope and budget, including adjustments incorporated into the LPA. After Project staff developed concepts for adjustments to the Project, which addressed comments received from stakeholders and on the Draft EIS, those proposed adjustments were taken through the advisory process, concluding with identification of the adjustments by the Council in April 2014. These design adjustments were recommended by the Council to avoid impacts, integrate mitigation measures, and allow for cost reductions associated with the Project.

In July 2015, the Council adopted additional design adjustments to the Project, after considering recommendations from the BAC, CAC, and CMC. The process of cost reductions was done in close coordination with Project stakeholders, including the five cities along the Southwest LRT Project and Hennepin County. Additional information about design adjustments to the LPA, are included in Chapter 2 of this Final EIS. For current SWLRT committees see

<http://www.metrocouncil.org/Transportation/Projects/Current-Projects/Southwest-LRT/SWLRT-Committees.aspx>.

Committee and Council meeting schedules, agendas, presentations, and minutes are posted on the Council's Southwest LRT Project website (<http://www.swlrt.org>). BAC, CAC, CMC and Council meetings are open to the public. The advisory committees include the following:

- **Technical Project Advisory Committee.** The TPAC was established by the Southwest LRT Project Office (SPO) to provide technical input on Project-related design, engineering, construction, and operation. The TPAC includes senior level staff, as well as engineering and planning staff from SPO, Metro Transit Rail Operations, city and county staff, MnDOT, and Three Rivers Park District. The TPAC also advises on the communication of technical issues with other committees; supports integration of design work with community land use and development goals and objectives; and identifies issues to avoid, minimize and mitigate impacts of the Project. Membership includes staff from the TPAC first met in February 2013, after Project Development activities began in earnest, and is chaired by the Southwest LRT Project Director.
- **Community Advisory Committee.** The CAC was formed in January 2007. The CAC serves as a primary avenue for public and community involvement, advising the Corridor Management Committee (discussed within this section) and providing feedback to Council staff on issues related to environmental documents, design, engineering, and construction of the Southwest LRT Project. The CAC advises on station location and design, feeder bus service, public art, traffic and parking, station/pedestrian access, construction mitigation, and impacts on corridor communities. The CAC also provides feedback to Hennepin County Community Works initiatives on land use and development issues in the corridor. The CAC represents a variety of interests, including neighborhood and community groups; underrepresented populations, including new immigrant communities, communities of color, low-

income communities, and persons with disabilities; educational institutions; environmental groups; religious organizations; freight rail concerns; transit riders; park, bike, and trail interests; station areas; seniors; youth; and affordable housing. CAC members represent a community near an LRT station. They are appointed by the City Council or the mayor, depending on each city's process. The CAC generally meets on a monthly basis and holds a joint meeting with the BAC (discussed within this section) at least twice a year. Council staff manage and support the work of the CAC with assistance and input from Hennepin County staff. Agendas, presentations, and meeting minutes for CAC meetings are posted on the Council's Southwest LRT Project website (<http://www.swlrt.org>). A representative of the CAC serves on the CMC and is a voting member.

- **Business Advisory Committee.** The BAC, formed in August 2012 by the Council and HCRRA, advises the CMC on project design and construction from a specific business perspective and serves as an information resource to the business community. The BAC also provides input on station area vision and character from a business point of view, addressing the needs of employees, customers, deliveries, and other aspects relevant to business retention and expansion. This committee represents a diversity of business establishments along the corridor, including small entrepreneurs, chambers of commerce and business organizations, corporate headquarters, nonprofit organizations, developers, and land owners. The BAC generally meets on a monthly basis and holds a joint meeting with the CAC at least twice a year. Council staff manage and support the work of the BAC with assistance and input from Hennepin County staff. Agendas, presentations, and meeting minutes for BAC meetings are posted on the Council's Southwest LRT Project website (<http://www.swlrt.org>). A representative of the BAC serves on the CMC and is a voting member.
- **Corridor Management Committee.** The CMC was established in December 2010 to provide advice to the Council on the Southwest LRT Project design and construction, as mandated by Minnesota Statutes 473.3994. The CMC advises the Council on issues relating to the environmental review, Project Development through final Engineering, implementation method, and construction of the Southwest LRT. The committee comprises representatives from the Council; HCRRA; the Cities of Minneapolis, St. Louis Park, Hopkins, Minnetonka, Eden Prairie, and Edina; Metro Transit; MnDOT; Minnesota Department of Management and Budget; the CAC and BAC; and the Counties Transit Improvement Board. The CMC is chaired by the Chair of the Council and generally meets monthly, or more often as needed. CMC recommendations are transmitted to the Council. Agendas, presentations, and meeting minutes for CMC meetings are posted on the Council's Southwest LRT Project website (<http://www.swlrt.org>).
- **Metropolitan Council.** The Southwest LRT Project receives direction from the Council and the Council's Transportation Committee, which focuses on regional transportation issues specifically concerning transportation policy and planning and transit operations. The Transportation Committee is composed of Council Members and meets on the 2nd and 4th Monday of each month. The full Council meets on the 2nd and 4th Wednesday of each month to discuss a broad range of topics impacting communities, parks, transportation, wastewater and water, housing, and planning. These meetings are public and agendas, presentations, and meeting minutes are posted on the Council's website (<http://www.metrocouncil.org>).

In addition to the above advisory structure, other committees were established to provide input into specific aspects of the project. These committees are described below; meetings of these committees are listed in the *Southwest LRT Community Events, Meetings, and Presentations Summary Report* listed in Appendix C:

- **Southwest LRT Community Works Steering Committee (Steering Committee).** The Steering Committee was established in 2009 by Hennepin County to focus on public investment and community benefits in the Southwest LRT Project vicinity. The Steering Committee meets monthly and includes members from the cities of Eden Prairie, Edina, Hopkins, Minneapolis, Minnetonka, and St. Louis Park; Hennepin County Board of Commissioners; HCRRA; the Council; Minnehaha Creek Watershed District; Minneapolis Park & Recreation Board; SouthWest Transit Board; and Minnesota Urban Land Institute. Additional information regarding the Community Works program is available at Hennepin County's Southwest Corridor website (<http://www.swlrtccommunityworks.org/get-involved/committees-meetings/committees>).

- **Kenilworth Landscape Design Committee.** The Committee was established in May 2015 to focus on the landscape design in the Kenilworth Corridor from West Lake to Station to the Penn Avenue Station. The purpose of the committee was to help ensure that landscape design would restore the natural setting while incorporating the regional trail system, light rail, and freight rail; to facilitate a transparent and inclusive design process; and generate design that integrates and visually minimizes LRT-related infrastructure. The twelve member committee has community representatives appointed by the City of Minneapolis, Minneapolis Park and Recreation Board, Hennepin County and the Southwest Project Office and includes representatives from Minneapolis' neighborhoods along the project corridor, Cedar Lake Park Association, Hennepin and Minneapolis Bike Advisory Committees, and Minneapolis Arts Commissions. The committee meets on an as needed basis, approximately monthly.
- **Communication Steering Committee.** The Communications Steering Committee establishes, reviews, implements, and updates the CPIP to maintain a coordinated communication and public involvement effort for the Southwest LRT Project. The Steering Committee includes communication and public affairs staff from the Council, Metro Transit, MnDOT, Hennepin County, and the corridor cities and is chaired by the Southwest LRT Assistant Director of Administration/Communication/Public Involvement.

Meetings shown in Exhibit 9.2-1 as well as meetings the Council held on topics related to the Southwest LRT Project are provided in the *Southwest LRT Community Events, Meetings, and Presentations Summary Report*, which is included in the Appendix C list of Supporting Documents and Technical Memorandums.

9.3 Agency Coordination

This section provides a description of the project's participating agencies and the Council's agency coordination efforts that supported the development and evaluation of design adjustments to the Project.

9.3.1 Participating Agencies

The Southwest LRT Agency Coordination Plan (Council and FTA, 2014), which helps guide the Project's agency coordination efforts, is based on the requirements of MAP-21, NEPA, and the EQB Environmental Review Program. The Project's original Coordination Plan for the Preparation of the Southwest Transitway Draft Environmental Impact Statement (HCRRA, 2008) was updated in 2014 to reflect agency and municipal coordination procedures underway during Project Development subsequent to the Draft EIS process. The updated Agency Coordination Plan summarizes the structure for coordination between the FTA, the Council, participating agencies, cooperating agencies, and the public.

A participating agency, as defined in the MAP-21 1305(c) guidance, is a federal, state, tribal, or local government agency that has an interest in the Project and that agrees to participate in the Project's NEPA and related processes. In general, participating agencies provide input, identify Project concerns, and partake in issue resolution processes to further the Project within the NEPA framework. The Project's federal and local lead agencies and federal cooperating agencies under NEPA are included as participating agencies. Chapter 12 and Appendix H of the Draft EIS describe the process used to identify potential participating agencies, including the FTA invitation to agencies to participate in the Project and the agencies' responses to those invitations. Table 9.3-1 lists the parties that accepted participating agency status as identified in Section 1.1.1 of the Draft EIS. The SPO worked with many of the Project's participating agencies during the Project Development process to provide input to adjustments to the Project.²

² The Council coordinates with other agencies that are not officially participating agencies; these include but are not limited to: (1) the Riley Purgatory Bluff Creek Watershed District, (2) the Bassett Creek Watershed Management Commission, (3) the Hennepin County Regional Railroad Authority, and (4) the Counties Transit Improvement Board.

TABLE 9.3-1
Participating Agencies

Federal Agencies
Advisory Council on Historic Preservation
United States Army Corps of Engineers
United States Department of Agriculture
United States Department of Housing and Urban Development
United States Department of Interior
United States Department of Transportation, Federal Highway Administration
United States Environmental Protection Agency
United States Department of Transportation, Federal Aviation Administration
United States Federal Emergency Management Agency
United States Department of Transportation, Federal Railroad Administration
United States Fish and Wildlife Service
United States Department of Homeland Security
Surface Transportation Board
State Agencies
Minnesota Pollution Control Agency
Minnesota Department of Health
Minnesota Department of Transportation
Minnesota Environmental Quality Board
Minnesota Department of Natural Resources
Indian Affairs Council
Board of Water and Soil Resources
Office of the State Archaeologist
Minnesota Department of Agriculture
Minnesota Department of Commerce
State Historic Preservation Office
Minnesota Historical Society
Regional Authorities
Three Rivers Park District
Minnehaha Creek Watershed District
Nine-Mile Creek Watershed District
Mississippi Watershed Management Organization
County Agencies
Hennepin County
Hennepin County Research, Planning and Development
Hennepin Conservation District
Local Government Agencies/Municipalities
City of Eden Prairie
City of Edina
City of Hopkins
City of Minneapolis
City of Minnetonka
City of St. Louis Park
Minneapolis Park and Recreation Board

A cooperating agency is a federal, state, or other agency with jurisdiction by law or special expertise that has been requested by the lead agency to be involved in the environmental documentation efforts per 40 Code of Federal Regulations (CFR) 1508.5. A cooperating agency is included as a participating agency, but not all participating agencies are NEPA-cooperating agencies. The U.S. Army Corps of Engineers (USACE) is a cooperating agency. The USACE is responsible for implementing NEPA and related laws and Section 404 of the Clean Water Act (CWA).

9.3.2 Agency Coordination since Publication of the Draft Environmental Impact Statement

This section provides an overview of the Council's agency coordination efforts since publication of the Draft EIS that supported the Council's efforts to develop and evaluate design adjustments to the Project, and that supported preparation of this Final EIS. These efforts were also supported by, and implemented in coordination with, the public involvement activities and advisory committees (TPAC, CAC, BAC, and CMC) described in Section 9.2 of this Final EIS. Agency coordination during the Project's AA and Draft EIS phases is documented in Section 12.2 of the Draft EIS. Subsequent to the publication of the Notice of Availability of the Supplemental Draft EIS in the *Federal Register* and the *EQB Monitor*, FTA and the Council provided a public comment period on the Supplemental Draft EIS. That comment period complied with NEPA and MEPA requirements and included public hearings, as outlined in the Executive Summary of this Final EIS. Substantive comments received on the Supplemental Draft EIS and Draft EIS are documented and responded to in this Final EIS. Agency coordination during the Supplemental Draft EIS phase is documented in Chapter 4 of the Supplemental Draft EIS.

Key elements of the Project's agency coordination efforts since publication of the Draft EIS included the following:

- **Technical Issues.** Following publication of the Draft EIS, the Council implemented a process to help identify and evaluate design adjustments to the LPA. The design adjustment process was organized around 25 technical issues. Each issue was addressed in detail by the project team, working closely with state and local jurisdictions and with representatives of affected railroads (for technical issue 21).
- **Clean Water Act Section 404 Coordination.** The U.S. Army Corps of Engineers (USACE) issued a preliminary jurisdictional determination in 2009 that stated that there may be waters and/or wetlands subject to USACE oversight. Based on information provided during Project Development, the USACE issued a second preliminary jurisdictional determination in 2015, which presumes that all aquatic resources listed on the preliminary jurisdictional determination are jurisdictional under the Federal CWA. The USACE completed an approved jurisdictional determination for the aquatic resources that were delineated within the Project corridor but are likely not regulated by the Federal CWA. The USACE also issued a determination of the Least Environmentally Damaging Practicable Alternative (LEDPA) in 2014. For CWA Section 404 purposes, the LEDPA is the alternative that meets the Project purpose, is available to the Project, and which has the least amount of impact to aquatic resources. Using a NEPA/404 merger process implemented since publication of the Draft EIS, FTA, the Council, and the USACE—which is a federal Cooperating Agency on the Project's Supplemental Draft EIS—have been coordinating on activities that will support the Project's CWA Section 404 wetland permit process. The merger process focuses on four key milestones, which are described in Section 3.9.3 of this Final EIS. In particular, this Final EIS includes an update of the USACE's LEDPA, where USACE provided concurrence on the first three of the four key milestones and preliminarily determined that LRT 3A-1³ is the LEDPA for the Project (see Section 3.9.3 and Appendix E of this Final EIS for additional detail).
- **Wetland Technical Evaluation Panel.** As prescribed under the Minnesota Wetland Conservation Act of 1991, a Technical Evaluation Panel (TEP) was established in July 2013 to institute coordination procedures as wetlands are delineated throughout the corridor, wetlands qualities are assessed, and mitigation options are considered. Chaired by the Assistant Director of Environmental and Agreements, the Project's TEP has members representing the USACE, Minnesota Board of Water and Soil Resources, Minnesota Department of Natural Resources, MnDOT, City of Eden Prairie, City of Minneapolis, City of

³ As described in Section 2.1.1 of this Final EIS, the Locally Preferred Alternative (LPA) includes capital improvements, construction activities, and transit operations. The LPA will be a 14.4-mile double-tracked light rail extension of the existing METRO Green Line, which will operate from Eden Prairie through Minnetonka, Hopkins, and St. Louis Park to downtown Minneapolis. The LPA will include 16 new light rail stations (including the Eden Prairie Town Center Station that has been deferred for construction at a later date than other stations along the route) and a new light rail operations and maintenance facility in Hopkins. It will also include nine park-and-rides (and an additional one to be deferred at Eden Prairie Town Center Station) with passenger drop-off areas, bicycle and pedestrian access, as well as new or restructured local bus routes connecting stations to regional and local destinations.

Minnetonka, City of St. Louis Park, Bassett Creek Watershed District, Minnehaha Creek Watershed District, Mississippi Watershed Management Organization, and Nine Mile Creek Watershed District. Representatives from Hennepin County and Riley Purgatory Bluff Creek Watershed District also participate in the TEP. The TEP first met on July 2, 2013, and generally meets on a monthly basis. The meetings are anticipated to continue through preparation and approval of the Project's wetland permits. Section 3.9.3 of this Final EIS identifies specific coordination activities with local governmental units responsible for local wetland permitting.

- Section 106 of the National Historic Preservation Act Coordination.** The Draft EIS identified tasks and coordination efforts occurring as part of the Section 106 process. Tasks described in the Draft EIS included identifying buildings, structures, and known archaeological sites within the Project Area of Potential Effect (APE) determined that a Section 106 Agreement (documenting the terms and conditions agreed upon to resolve adverse effects related to historic properties) needed to be developed among the FTA, the Advisory Council on Historic Preservation, Minnesota State Historic Preservation Office (MnHPO), the Council, and other interested parties during the Final EIS process. Section 106 coordination is documented in Section 12.2.2 of the Draft EIS and has been ongoing since publication of the Draft EIS. Section 3.5.2 of this Final EIS documents the evaluation of Section 106 resources within the scope of this document and related coordination activities between the Council, FTA, the MnDOT Cultural Resources Unit, and the MnHPO. Section 106 consulting parties include the MnHPO; USACE; Hennepin County; the Cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis; the Minneapolis Park and Recreation Board; the Minneapolis Heritage Preservation Commission; the St. Louis Park Historical Society; Three Rivers Park District; Cedar-Isles-Dean Neighborhood Association; and Kenwood Isles Area Association. Signatories and invited signatories to the Section 106 Memorandum of Agreement include the FTA, MnHPO, USACE, and the Council.
- Tribal Coordination.** In September and November 2009 and February 2010, the FTA sent letters to potentially affected Indian tribes, requesting that they identify any concerns about potential project impacts. The letters were sent to the Prairie Island Indian Community, Lower Sioux Indian Community Council, Shakopee Mdewakanton Sioux Community, Fort Peck Tribes, Santee Sioux Nation, Sisseton-Wahpeton Oyate (Tribal Historic Preservation Office), and the Upper Sioux Indian Community. In addition, a meeting opportunity was offered to tribal representatives in 2010; none of the representatives expressed an interest in meeting at that time. Section 12.2.3 of the Draft EIS documents tribal coordination. The Indian tribes listed above were sent copies of the Supplemental Draft EIS in May 2015, as documented in Appendix A of that document.

Coordination with agencies occurred throughout preparation of the Southwest LRT Final EIS.

9.4 Summary of Public and Agency Comments on the Draft EIS and Supplemental Draft EIS

This section provides a summary of comments received on the Draft EIS and the Supplemental Draft EIS. Complete responses to comments received on the Draft EIS are included in Appendix L of this Final EIS. Complete responses to comments received on the Supplemental Draft EIS are included in Appendix M of this Final EIS.

9.4.1 Public and Agency Comments on the Draft EIS

The public comment period for the Draft EIS began upon the Notice of Availability published in the *Federal Register* on October 12, 2012, and concluded on December 31, 2012.

9.4.1.1 Draft EIS Comments Received

A total of 997 comments on the Draft EIS were submitted, in the form of letters, emails, public testimony at the public hearings, and comment cards received at the public open houses and public hearings (see Section 9.1 for more information on the Project's public involvement activities). Comments were received from individuals, businesses, community groups, non-profit organizations, and public agencies, including local municipalities, state and regulatory agencies. Agencies that submitted comments in response to the Draft EIS include: U.S. Environmental Protection Agency (EPA), USACE, U.S. Department of Interior, Surface

Transportation Board, MnDOT, Minnesota Department of Health-Environmental Health Division, Three Rivers Park District, Minnehaha Creek Watershed District, Nine Mile Creek Watershed District, Minneapolis Park and Recreation Board, and the cities of Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis. The agencies' correspondence is included in Appendix L. Following is a brief summary of these agencies' overall concerns, including a reference to where in Appendix L their particular comments can be found.

- The **EPA**, commented on the Draft EIS in a letter dated December 27, 2012. The EPA's comments discuss the Project's Purpose and Need, alternatives, environmental impacts, and mitigation of impacts. The EPA recommended clarifying the Project Purpose and Need and adequately analyzing alternative impacts related to the operations and maintenance facility, aquatic resources, environmental justice compliance, neighborhoods, and several other issues. See comment #862 in Appendix L.2.
- The **USACE**, which became a federal Cooperating Agency on the Project in July 2013, commented on the Draft EIS in a letter dated December 20, 2012. The USACE's comments were generally concerned with Project compliance with the Clean Water Act and the Section 404 wetland permitting process, including their preliminary determination that LRT 3A (relocation) would not qualify as the Least Environmentally Damaging Practicable Alternative. See comment #489 in Appendix L.2.
- **U.S. Department of Interior** commented on the Draft EIS in a letter dated December 7, 2012. The DOI commented on the preliminary level of detail in the Section 4(f) Evaluation, noting that they will withhold its final concurrence that there are no feasible or prudent avoidance alternatives until a preferred alternative is selected and mitigation measures have been determined. See comment #234 in Appendix L.2.
- **Surface Transportation Board** commented on the Draft EIS in a letter dated December 19, 2012. The Surface Transportation Board comments presented a range of issues concerning the Project's Purpose and Need, the Surface Transportation Board's involvement with the Project, and the Draft EIS LPA with relocation of TC&W freight trains to the Minneapolis, Northfield, and Southern Railway (MN&S) Spur and Wayzata Subdivision. See comment #351 in Appendix L.2.
- **MnDOT** commented on the Draft EIS in a letter dated December 7, 2012. MnDOT commented on a range of issues concerning alternatives considered, noise, water resources, design, planning, traffic and permits. See comment #372 in Appendix L.2.
- **Minnesota Department of Health-Environmental Health Division** commented on the Draft EIS in a letter dated December 31, 2012. The Department of Health letter stated that the Project may overlap several communities' Drinking Water Supply Management Areas and Emergency Response Areas for public drinking water supply wells. As a result, the Department of Health is concerned that the potential need for temporary and permanent dewatering could negatively affect public drinking water supplies. See comment #625 in Appendix L.2.
- **Three Rivers Park District** commented on the Draft EIS in a letter dated December 28, 2012. The Park District's letter identified the regional trails that could be affected by the Project, and it noted a lack of consistency in how regional trails are characterized. The letter also stated that trail use estimates in the Draft EIS do not provide an accurate picture of actual trail use. The Park District is concerned that the following issues are not adequately addressed: costs and funding sources for regional trails affected by the Project and the implementation and ownership of the North Cedar Lake Regional Trail/MN&S Spur Bridge. See comment #499 in Appendix L.2.
- **Minnehaha Creek Watershed District** commented on the Draft EIS in a letter dated December 6, 2012. The District explained its regulatory role in projects like Southwest LRT that have the potential to affect water resources, and identified its projects in the riparian corridor of Minnehaha Creek that could be affected by the Project. The District is interested in the potential reconstruction of the light rail crossing over Minnehaha Creek and managing stormwater runoff in a comprehensive manner. See comment #368 in Appendix L.2.

- **Nine Mile Creek Watershed District** commented on the Draft EIS in a letter dated December 31, 2012. The District had several water resource concerns, including minimizing impacts to Nine Mile Creek and its floodplains, wetland evaluation methods and wetland mitigation requirements, and stormwater retention and treatment. The District also commented on the size of the Project's impact area, best management practices, and its regulatory requirements. See comment #621 in Appendix L.2.
- **The City of Eden Prairie** commented on the Draft EIS in a letter dated December 4, 2012. The City provided a range of comments on the Project's design, operations, environmental impacts, and mitigation of impacts. See comment #191 in Appendix L.2.
- **The City of Minnetonka** commented on the Draft EIS in a letter dated December 14, 2012. The City provided a range of comments on the alternatives considered; the Project's social, environmental, economic, and transportation effects, indirect effects, and cumulative impacts; and public and agency water resources, design, planning, traffic and permits. See comment #344 in Appendix L.2.
- **The City of Hopkins** commented on the Draft EIS in a letter dated December 28, 2012. The City commented on the Project's alternatives considered, environmental impacts, and mitigation of impacts. See comment #492 in Appendix L.2.
- **The City of St. Louis Park** commented on the Draft EIS in a letter dated December 21, 2012. The City reiterated its support for the Project and expressed concern about the information in the Draft EIS that supported the LRT 3A alternative (relocation). The City provided information supporting its opposition to LRT 3A (relocation) and supporting its conclusion that dismissing LRT 3A-1 (co-location) was premature. See comment #487 in Appendix L.2.
- **The City of Minneapolis** commented on the Draft EIS in a letter dated December 4, 2012. The City commented on the alternatives considered, minimizing impacts to cultural resources, and mitigating for a wide range of impacts. See comment #250 in Appendix L.2.
- **Minneapolis Park and Recreation Board** commented on the Draft EIS in a letter dated December 5, 2012. The City commented on a range of issues concerning the Project's alternatives considered and potential impacts to parks, trails, and historic resources. See comment #226 in Appendix L.2.

For purposes of responding to Draft EIS comments, the Council organized comments into major themes, including comments received:

- Either in favor or not in favor of the Project
- Related to Project elements, including engineering of the alignment, stations, and the OMF
- On Project costs and effectiveness
- Related to the NEPA process, including the scoping process, extent, and effort of the analysis of alternatives, and outreach efforts
- On various social issues such as safety due to close proximity of train operations, the barrier the light rail alignment may create to community cohesion, economic issues such as potential community development, loss of parking for businesses, potential property acquisitions, and environmental effects such as impacts to parks, vegetation, wildlife, groundwater, and cultural and historic resources
- On transportation system effects such as maintaining access to businesses, changes to traffic patterns that may create local congestion and inhibit emergency vehicle access, impacts to parking, and supporting an alternative transportation mode

In general, comments in support of the Project noted enhanced transit service, accessibility, and lower transit travel times. Comments opposed to the Project cited cost of the Project and that the funds could be spent on other public transportation to greater effect, moving the location chosen for the alignment to one of the other alternatives previously studied, and concerns about LRT reducing property values because of the potential increase in noise, traffic, and neighborhood parking. Other commenters expressed concern about increased property values because of development resulting from a nearby station.

Many comments received were related to the location of freight rail relative to the Project. Numerous comments were received opposing freight rail co-location in the Kenilworth Corridor, as well as opposing the rerouting of freight rail into St. Louis Park.

Other comments focused on design elements and environmental issues. Specific design issues that generated numerous comments included:

- Support for a tunnel or trench in the Kenilworth Corridor
- Preferences regarding specific stations and the OMF location
- Alignment adjustment comments, including adjustments in Eden Prairie
- Preference for other Draft EIS Alternatives

Specific environmental issues that generated numerous comments included:

- Concerns about noise and vibration impacts from LRT, as well as from relocated freight rail operation
- Neighborhood and community impact concerns related to safety and security due to freight rail and light rail alignments in close proximity to one another and to residents, construction impacts and hazards, potential to increase emergency vehicle response times, proposed park and ride lots in Minneapolis with harmful impacts to local traffic and community character (spillover parking) combined with increased noise
- Concern about acquisitions and displacements and impacts to residents and businesses
- Concerns about maintaining park-like settings and potential impacts on visual quality and impacts from noise for many park resources along the corridor including Cedar Lake Parkway, Purgatory Creek Park, and trails
- Comments on environmental justice, including the need to more thoroughly study impacts from freight rail relocation and support of the Penn and Van White stations in assisting environmental justice communities with improved access to employment opportunities
- Economic impacts, including concerns over impacts to freight rail owners and operators resulting from the re-route, the importance of maintaining economical freight rail operations in the communities served by rail, that rail shipping stays competitive, and the need for an alternative to the re-route
- Requests for additional analyses on water resources within the study area, including more accurate wetland determinations

All substantive comments received during the Draft EIS comment period and responses to the comments are in Appendix L of this Final EIS.

9.4.2 Public and Agency Comments on the Supplemental Draft EIS

After release of the Supplemental Draft EIS on May 22, 2015, the public, agencies, and jurisdictions were offered the opportunity to review and comment on the Supplemental Draft EIS during the FTA public review process, consistent with NEPA and MEPA requirements. The process included three public open houses and hearings held in the project area and a public comment period from May 22, 2015, through July 21, 2015. Approximately 100 people attended the Southwest LRT Project public open houses and hearings in June 2015. The public open houses allowed attendees to review project information and discuss the Supplemental Draft EIS with Project team members. Public notices announcing the publication of the Supplemental Draft EIS, the duration of the Supplemental Draft EIS public comment period, and the times and locations of the open houses and public hearings can be found in Appendix G and in the *Southwest LRT Community Events, Meetings, and Presentations Summary Report* listed in Appendix C (see Appendix C for instructions on how to access this document).

9.4.2.1 Supplemental Draft EIS Comments Received

A total of 206 comments were received during the public comment period for the Supplemental Draft EIS. Comments were submitted in the following formats: emails; testimony at the public hearings held on June 16, 17, and 18, 2015; comment cards; and letters. Comments were received from individuals, businesses,

community groups, non-profit organizations, and public agencies, including local municipalities, state and regulatory agencies. Agencies that submitted comments in response to the Supplemental Draft EIS include EPA, U.S. Department of Interior, MnDOT, Minnesota Department of Natural Resources (MnDNR), Minnesota Department of Health (MDH), Hennepin County Public Works, the cities of Eden Prairie, Minnetonka, St. Louis Park, and Minneapolis; and the Minneapolis Park and Recreation Board. One representative and two senators from the Minnesota State Legislature submitted comments. The agencies' correspondence is included in Appendix M. Following is a brief summary of these agencies' overall concerns, including a reference to where in Appendix M.2 their particular comment can be found.

- **EPA** commented on the Supplemental Draft EIS in a letter dated July 16, 2015. The EPA stated that because of the limited scope of the Supplemental Draft EIS, the agency's comments on the Draft EIS still apply. The EPA remains concerned about potential impacts to aquatic resources, water quality, and mitigation. See comment #201 in Appendix M.2.
- **U.S. Department of Interior** commented on the Supplemental Draft EIS in a letter dated July 17, 2015. The Department of Interior provided its consideration of effects to properties identified in the project study area as eligible to be considered under Section 4(f). While the FTA has made preliminary determinations on properties with which the Department of Interior concurs, the department will reserve concurrence when an agreement is signed. See comment #210 in Appendix M.2.
- **MnDOT** commented on the Supplemental Draft EIS in a letter dated July 21, 2015. MnDOT provided comments on rail operations near Target Field Station, stated that noise mitigation must follow state and federal guidelines, provided comments stating that submission of drainage permits and design of trunk highways be coordinated with MnDOT. See comment #130 in Appendix M.2.
- **MnDNR** commented on the Supplemental Draft EIS in a letter dated July 21, 2015. MnDNR agreed with the statements of "no effect" for biota and habitat. The MnDNR made requests that high-profile areas for wildlife crossings be identified (wetlands, public waters, open park spaces). See comment #151 in Appendix M.2.
- **MDH** commented on the Supplemental Draft EIS in a letter dated July 21, 2015. The MDH comments focused on the importance of transit accessibility to lower-income residents, students, people of color, and other transit dependent populations. They encouraged the Council to ensure that transit benefits all communities. See comment #170 in Appendix M.2.
- **Hennepin County Public Works** commented on the Supplemental Draft EIS in a letter dated July 21, 2015. Hennepin County submitted a list of items pertaining to engineering activities such as wetland replacement, floodplain designations, stormwater management, and treatment of contamination sources. See comment #156 in Appendix M.2.
- **The City of Eden Prairie** commented on the Supplemental Draft EIS in a letter dated July 21, 2015. Its general comments expressed support for the Supplemental Draft EIS alignment. General comments included the necessity for inclusion of the following in the design process: stations, visual components, park impacts, parking, and future development. See comment #142 in Appendix M.2.
- **The City of Minnetonka** commented on the Supplemental Draft EIS in a letter dated July 10, 2015. The letter included a range of issues and requests for additional traffic operations analysis, adherence to stormwater management standards, and accurate determinations of wetlands. See comment #105 in Appendix M.2.
- **The City of St. Louis Park** commented on the Supplemental Draft EIS in a letter dated July 21, 2015. Comments from the City addressed noise impacts, the need for accurate assessments of contaminated sites, traffic improvement efforts to prevent congestion, and maintaining quality trail experiences. The letter requested that the freight rail conclusions be stated clearly. See comment #181 in Appendix M.2.
- **The City of Minneapolis** commented on the Supplemental Draft EIS in a letter dated July 16, 2015. The city stated its appreciation of the Council's work to address city concerns and provided comments on the following impacts in the Kenilworth Corridor: construction, noise, vibration, and visual impacts. The

letter also stated the need for coordination on traffic, transit connections, and bicycle and pedestrian safety. See comment #171 in Appendix M.2.

- **The Minneapolis Park and Recreation Board** commented on the Supplemental Draft EIS in a letter dated July 21, 2015. The letter state that there would be impacts to the Kenilworth Corridor and nearby parks' setting and experience related to LRT operations. The letter expressed concern for the effects to historic and recreational resources and stated that features should be restored to match existent conditions as closely as possible. See comment #143 in Appendix M.2.
- **Senator Tim Kelly** commented on the Supplemental Draft EIS in a letter dated June 23, 2015. Senator Kelly's comments focused on the cost of and funding for the Project. He sent the Council Chair questions about the Council's proposed use of Certificates of Participation. See comment #226 in Appendix M.2.
- **Representative Frank Hornstein and Senator Scott Dibble** commented on the Supplemental Draft EIS in a letter dated July 21, 2015. The representatives' comments included concerns about locating freight rail in the Kenilworth Corridor and the need for an adequate discussion of safety operations for freight rail, and they requested the development of coordination and response plans. See comment #196 in Appendix M.2.

Multiple comments expressed concerns over the Project design adjustments within the Kenilworth Corridor and proposed options and modifications. Environmental concerns generated comments from individuals as well as community and neighborhood organizations.

The most frequent topics of public comments were noise; vibration; safety and security; general opposition to freight rail co-location; and the AA/NEPA process. Appendix M documents all comments received on the Supplemental Draft EIS and includes the responses to those comments. The following list summarizes the issues raised in the comments received:

- Concerns about safety in the Kenilworth Corridor with light rail operating in close proximity to freight rail; operations and potential hazardous freight rail cargo, the safety and security of LRT construction, and safety of roadway, trail, and sidewalk crossings at 21st Street West
- Project elements, including engineering of the alignment, stations in the Kenilworth Corridor area, construction and operation of the Kenilworth tunnel (groundwater, safety, utility relocation)
- Project costs for potential additional construction activities (e.g., removing contaminated soil, relocation of existing sewers) and lost property tax revenue as costs to the community
- NEPA process, including the scoping process, potential impacts to Grand Rounds Historic District, and that freight rail operations should not be considered an existing condition and should be excluded from the baseline data
- Replacement of the Skunk Hollow Switching Wye with the Southerly Connector (between Bass Lake Spur and the MN&S Spur) and impacts related to neighborhoods, visual quality, noise, and vibration
- Environmental issues generated comments about visual impacts to the park and historic resources in the Kenilworth Corridor, noise impacts to the Kenilworth Corridor community, and vibration impacts from LRT tunnel construction

All comments received during the Supplemental Draft EIS comment period and responses to the comments are in Appendix M of this Final EIS.

9.5 Permits and Approvals Required

The Draft EIS identified preliminary permits, approvals, or reviews required for the Project in Table 12.2-2. Table 9.5-1 of this Final EIS updates this information.⁴ Project staff continue to work with the applicable

⁴ This section complies with MN Administrative Rules 4410.2300(F) by listing all known governmental permits and approvals required for the Project, including identification of the governmental unit that is responsible for each permit or approval. Permits and approvals are defined under MN Administrative Rules 4410.0200 Subp. 4 and Subp. 5.

agencies on the permits, approvals, and reviews required for the Project and additional permits, approvals, and reviews may be identified as the Project advances.

TABLE 9.5-1

Preliminary List of Required Permits/Approvals and Reviews (by Agency Jurisdiction)

Government Agency	Type and/or Name of Document	Permit	Approval	Other
Federal				
Federal Transit Administration	Environmental Impact Statement		•	
	Section 4(f)		•	
	Section 106 of the National Historic Preservation Act – Agreement		•	
	Record of Decision		•	
U.S. Army Corps of Engineers	Environmental Impact Statement		•	
	CWA Section 404 Permit	•		
	Section 106 of the National Historic Preservation Act – Agreement		•	
U.S. Fish and Wildlife Services	Section 7 of the Threatened and Endangered Species Act			•
Advisory Council on Historic Preservation	Section 106 of the National Historic Preservation Act – Agreement			•
Department of the Interior	Section 4(f)			•
Environmental Protection Agency	Environmental Impact Statement		•	
State				
MN Department of Health	Cap and Abandon Wells	•		
	Water Main Plan Review			•
Minnesota Department of Transportation	Permit to Construct on MnDOT Right of Way	•		
	Wetland Conservation Act Wetland Replacement Plan		•	
	Section 106 of the National Historic Preservation Act – Agreement		•	
MN Department of Natural Resources	Public Waters Work	•		
	Water Appropriation Permit	•		
	Natural Heritage Information System Review for Rare Features			•
MN Pollution Control Agency	National Pollutant Discharge Elimination System Permit	•		
	CWA Section 401 Water Quality Certification		•	
	Response Action Plan		•	
	Application for Voluntary Brownfield Program Participation (addresses non-petroleum and petroleum contamination)		•	
	Industrial Groundwater Pump Out	•		
State Board of Electricity, MN Department of Labor and Industry	Electrical Permits	•		
Minnesota Historic Preservation Office (MnHPO)	Section 106 of the National Historic Preservation Act – Agreement		•	
	Design Review			•
Local and Regional				
Metropolitan Council	Environmental Impact Statement		•	
	Section 106 of the National Historic Preservation Act – Agreement		•	

Government Agency	Type and/or Name of Document	Permit	Approval	Other
	EIS Adequacy Determination (state process)		•	
	Rail Access Permit	•		
	Special Discharge Permt	•		
Hennepin County	Section 106 of the National Historic Preservation Act – Agreement			• a
City of Minneapolis	Utility Permits Construction	•		
	Sediment and Erosion Control Permit	•		
	Section 106 of the National Historic Preservation Act – Agreement			• a
	Permit to Construct on Minneapolis Right of Way	•		
City of St. Louis Park	Utility Permits Construction	•		
	Section 106 of the National Historic Preservation Act - Agreement			• a
	Permit to Construct on St. Louis Park Right of Way	•		
City of Hopkins	Utility Permits Construction	•		
	Sediment and Erosion Control Permit	•		
	Section 106 of the National Historic Preservation Act - Agreement			• a
	Permit to Construct on Hopkins Right of Way	•		
City of Minnetonka	Utility Permits Construction	•		
	Grading, Filling, Excavation Permit	•		
	Wetland Conservation Act Wetland Replacement Plan		•	
	Section 106 of the National Historic Preservation Act - Agreement			• a
	Permit to Construct on St. Louis Park Right of Way	•		
City of Eden Prairie	Utility Permits Construction	•		
	Wetland Conservation Act Wetland Replacement Plan		•	
	Eden Prairie Wetland Replacement Plan		•	
	Land Alteration Permit	•		
	Section 106 of the National Historic Preservation Act - Agreement			• a
	Permit to Construct on Eden Prairie of Way	•		
Minneapolis Park & Recreation Board	Permit to Construct on MPRB Right of Way	•		
	Section 106 of the National Historic Preservation Act - Agreement			• a
Nine Mile Creek Watershed District	Permit to Construct on NMCWD Right of Way	•		
	Wetland Conservation Act Wetland Replacement Plan		•	
	Wetland Permit	•		
Minnehaha Creek Watershed District	Water Resource Permit	•		
Riley Purgatory Bluff Creek Watershed District	Permit to Construct on RPBCWD Right of Way	•		

Government Agency	Type and/or Name of Document	Permit	Approval	Other
Three Rivers Park District	Section 106 of the National Historic Preservation Act – Agreement			• ^a
St. Louis Park Historical Society	Section 106 of the National Historic Preservation Act – Agreement			• ^a
Bassett Creek Watershed Management Commission	Development Proposal Permit	•		
Non-Government Agency				
Burlington Northern Santa Fe Railroad	Permit to Construct on Railroad Right of Way	•		
Canadian Pacific Railroad	Permit to Construct on Railroad Right of Way	•		
Kenwood Isles Area Association	Section 106 of the National Historic Preservation Act – Agreement			• ^a
Cedar Isles Dean Neighborhood Association	Section 106 of the National Historic Preservation Act – Agreement			• ^a

^a 36 CFR 800.6(c)(3)

Source: Update of the Draft EIS Table 12.2-2.

In addition to the above permits/approvals/reviews, in October 2014 the Project received a jurisdiction determination from the Federal Railroad Authority (FRA). FRA has safety jurisdiction, delegated from the Secretary of Transportation, over any type of railroad carrier regardless of the type of equipment that it uses or its connection to the general system, with the exception of rapid transit operations in an urban area that are not connected to the general system.⁵ FRA will, however, exercise jurisdiction over commuter, short-haul railroads and urban rapid transit (URT) to the extent that it is necessary to help ensure railroad safety at shared connection points, such as shared highway-rail grade crossings.⁶ FRA concluded that the proposed Southwest LRT Project will be a URT operation; therefore, FRA will exercise its safety jurisdiction and regulations over the five shared highway-rail grade crossings for the Southwest LRT Project, and these regulations will not apply to other locations, such as where freight rail and light rail will operate adjacent to each other, recognizing that freight rail and URT systems are regulated separately and differently. (See Appendix N of this Final EIS for a copy of this letter and description of the five shared highway-rail grade crossings.)

⁵ See 49 United States Code Section 20102(2)(B) and 49 CFR Part 189.

⁶ See 49 United States Code Section 20102(2)(A)(i) and Appendix A to 49 CFR Part 209.

10 Joint Development

This chapter describes potential long-term direct and indirect and short-term (construction) direct and indirect effects that would result from the Southwest Light Rail Transit (LRT) Project (the Project) with the proposed Beltline Station joint development project, compared to the effects that would result from the Project without the proposed Beltline Station joint development project. This section includes an overview of the regulatory context and methodology used for the analysis; a description of the proposed joint development project; a description of the anticipated environmental consequences related to the proposed joint development project; and a description of mitigation measures to implement with the joint development project. The discussion of impacts in this section assumes the construction of the Project as described in Section 2.2.1 of this Final Environmental Impact Statement (EIS).

This chapter includes the following sections:

- 10.1 Regulatory Context and Methodology
- 10.2 Joint Development Project Description
- 10.3 Affected Environment
- 10.4 Environmental Consequences
- 10.5 Mitigation Measures

10.1 Regulatory Context and Methodology

This section provides a description of the regulations that affect the evaluation and implementation of a joint development project that would use federal funds when it is associated with a larger overall project that would also use federal funds. This section also provides a brief description of how impacts of the proposed joint development project are assessed within this chapter.

Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents, provides guidance that an agency developing a project that uses federal money should identify and discuss those joint development project measures that will preserve or enhance an affected community's social, economic, environmental, and visual values. In line with this guidance, this section discusses proposed projects that might be developed jointly with the proposed Southwest LRT Project. Joint development is a term which, in the context of a federally assisted transportation project, encompasses opportunities and expected impacts that are also addressed elsewhere in this Final EIS.

The Federal Transit Administration (FTA) Circular *Federal Transit Administration Guidance on Joint Development* (FTA C 7050.1) provides guidance to recipients of FTA financial assistance on how to use FTA funds or FTA-funded real property for joint development projects. Although it is not within the purview of National Environmental Policy Act to address, it is worth noting here the Circular contains four eligibility criteria that must be met by Project sponsors of an FTA-assisted joint development project in order for that joint development project to be eligible for capital funding. The four criteria are economic benefit, transit benefit, revenue, and tenant contribution.

The analysis of the proposed joint development project within this chapter is based on the assessment of impacts of the Project with the proposed joint development project, compared to the impacts of the Project without the proposed joint development project. The methodologies for the environmental categories addressed within this chapter are described in the corresponding regulatory context and methodology sections of the environmental categories included in Chapters 3 and 4.

Any future joint development project associated with the Project would need to successfully complete appropriate state environmental permitting processes. The environmental assessment included within this chapter only relates to the parcels of property that would contain the proposed structured parking lot.

10.2 Joint Development Project Description

Table 10.2-1 provides a summary of the Southwest LRT Project without and with the Beltline joint development project and it notes which elements of the joint development project would be funded through a mix of federal and local funds and which would be funded through a mix of local public and private funds.

TABLE 10.2-1

Project Elements without and with the Beltline Station Joint Development Project

Project Element	Without Beltline Joint Development Project	With Beltline Joint Development Project ^a	Joint Development Element Funding Source
Site Area	1.59 acres	6.85 acres	Federal/Local
Transit Use	LRT Station/Park-and-Ride Lot	LRT Station/Park-and-Ride Lot	Federal/Local
Retail Use	None	12,200 square feet	Local (public/private)
Office Use	None	312,000 square feet	Local (public/private)
Residential Use	None	260 units	Local (public/private)
Park-and-Ride Parking	Surface – 268 spaces	Structured – 540 spaces	Federal/Local
Retail Parking ^c	0	Structured – 49 spaces	Federal/Local ^d
Office Parking ^c	0	Structured – 1,040 spaces	Federal/Local ^d
Residential Parking ^c	0 spaces	Structured – 416 spaces	Federal/Local ^d

^a All quantities are approximate and may change as the design advances for the proposed Beltline Station joint development project.

^b Funding that is designated as Federal/Local would be included within the Project's Full Funding Grant Agreement between the Council and FTA.

^c District parking is parking spaces that would be available for the commercial, office, and residential uses of the site.

^d Federal funding will be applied to 200 of the district parking spaces.

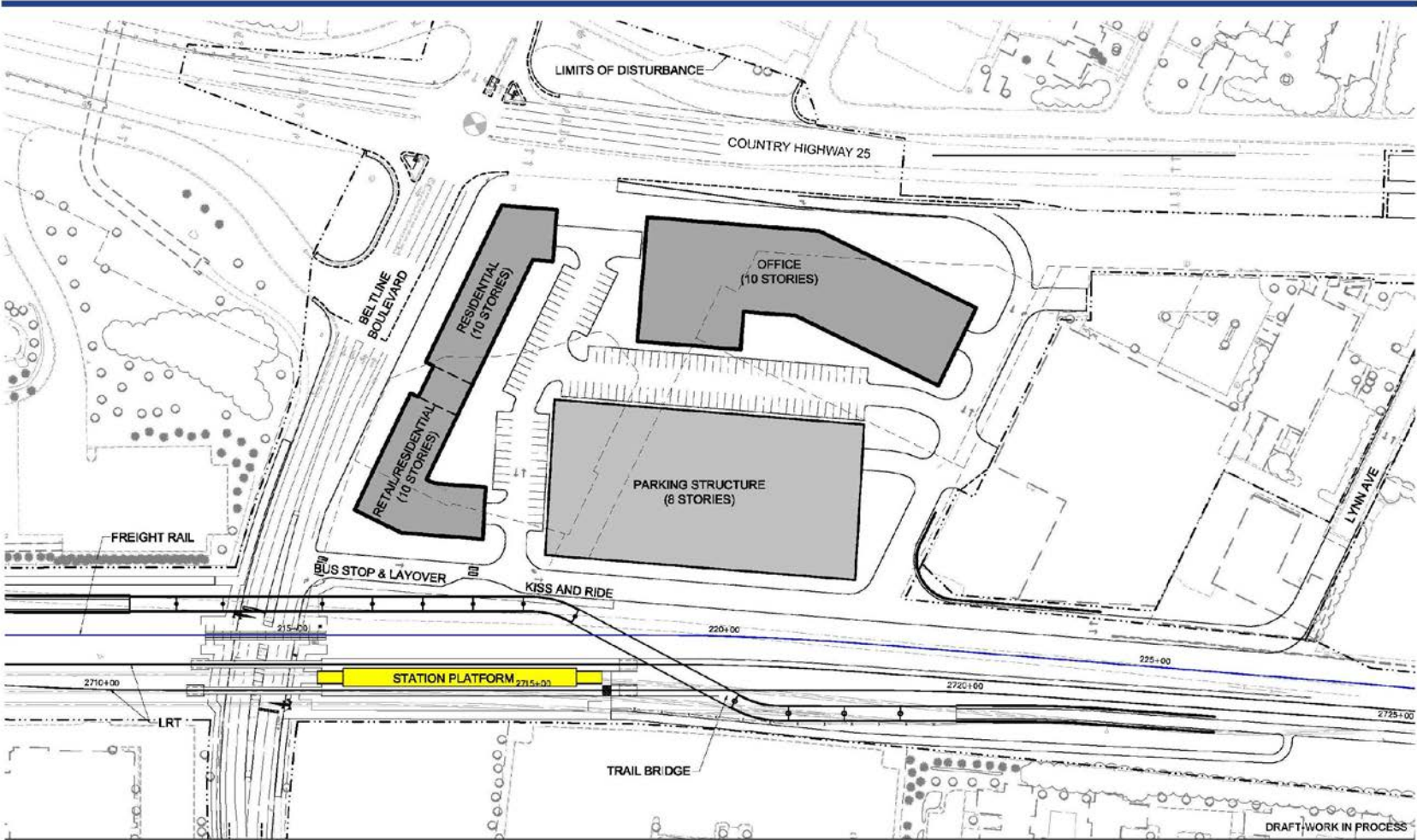
Source: Council, 2015.


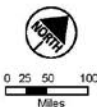

This Final EIS assesses the joint development project opportunity at the proposed Beltline Station, described as follows:

- Project Without the Beltline Joint Development Project.** Under the proposed Southwest LRT Project without the Beltline Station joint development project, the Beltline Station in St. Louis Park will include a 268-space surface park-and-ride facility, a bus stop/layover and a passenger drop-off area to be constructed on the east side of Beltline Boulevard in the area between the Beltline Station platform on the south and County Road 25 on the north. See Sheet 19 in Appendix E for illustration of the Beltline Station area under the Southwest LRT Project if the joint development project were not constructed.
- Project with the Beltline Joint Development Project.** See Exhibit 10.2-1 for an illustration of the Beltline Station area under the Southwest LRT Project with the Beltline Station joint development project. Under the proposed Southwest LRT Project with the Beltline Station joint development project, the Project would include a 540-space park-and-ride in a structured parking lot (10 stories). Other parking spaces in the structured parking lot would be available to commercial, office, and retail users of the proposed joint development site (and there would other on-site lots available to those users, which together would total 1,505 spaces). The Beltline Station would continue to have a bus stop, bus layover bay, and a passenger drop-off area on the east side of Beltline Boulevard in the area between the Beltline Station platform on the south and Highway 25 on the north. A mix of federal and local funds would be used to fund acquisition of the additional property needed for the joint development project and to construct the shared use parking.

Under the proposed joint development plan, the site would also include multi-story retail, office, and residential buildings (which would include some of the additional parking for users of the joint development site). Should the final mix of retail, office, and residential uses that would occupy the site warrant it, the Beltline Station joint development project would also include the addition of a west-bound left-turn lane on Park Glen Road at Beltline Boulevard. A mix of local public and private funds would be used to construct the mix of retail, office, and residential improvements that would occupy the site, as well as the potential additional lane on Park Glen Road.

EXHIBIT 10.2-1
Beltline Station Joint Development Project



	<p align="center">Southwest LRT FINAL EIS St. Louis Park - Beltline Station Area Joint Development Project</p>		
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The Beltline Station joint development project would generate revenue for Metro Transit through legal agreements with private parties for their use of land owned by Metro Transit through a long-term ground lease, air rights over the public improvements, or lease payments for parking spaces in the structured parking facility. The parking lease payments would be generated through district parking¹ or a shared parking arrangement. As previously mentioned, the proposed Beltline Station joint development project capital finance plan has two general components: (1) a mix of federal and local funds to fund a portion of the sites improvements; and (2) a mix of local public and private funds that contemplates a private developer as a partner to construct the commercial, office, and residential elements of the joint development project. The description and illustration of the Beltline Station joint development included in this analysis project was developed in conjunction with the City of Saint Louis Park using the density allowed under the City's Mixed-Use Zoning District and previous planning work for the Beltline Station. The specific development program will be determined when the private developer is identified and the joint development project is implemented.

The Council and the City of St. Louis Park are pursuing the Beltline Station joint development project as a means to achieve economic growth and other local land use economic development goals, such as increasing the area's tax base, retain and create new jobs, establish a mix of uses around the proposed light rail station area, and capitalize on the site's proximity to existing and proposed transit, bicycle and pedestrian, and roadway facilities. In addition, they seek to increase density of use around the proposed light rail station, thereby increasing transit ridership.

Several factors will affect the schedule for implementing the proposed Beltline Station joint development project. First, initiation of implementation of the joint development project will occur only after FTA issues the Project's Record of Decision, which will include the proposed joint development project. Second, final approval of the Beltline Station joint development project and its inclusion in the Project will occur with FTA's approval of a Full Funding Grant Agreement for the Project and FTA approval of the Formal Joint Development Application. Lastly, acquisition of the property to be used for the joint development project will be required to comply with Minnesota regulations that affect government acquisition of property and must also be acquired, managed, and used in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act), 42 U.S.C. Chapter 61; implementing regulations at 49 CFR Part 24. Construction of the joint development project would occur concurrently with construction of the Project.

10.3 Affected Environment

The City of Saint Louis Park's City comprehensive plan land use designation for all of the parcels anticipated to be used for joint development is Mixed Use.² The mixed use land use designation, which will take effect upon FTA's issuance of the Project's Record of Decision, will allow the properties to eventually be rezoned to the City's mixed use zoning district. The land is currently zoned industrial, pending the implementation of the comprehensive plan Mixed Use designation and subsequent anticipated re-zoning. The site currently contains three structures. It is located between Beltline Boulevard on the west, Highway 25 on the north and the freight rail corridor and proposed light rail alignment on the south. To the west and east of the proposed joint development project site are light industrial and commercial businesses. Highway 25 separates the proposed joint development project site from the predominantly residential Triangle Neighborhood located to the north of the highway.

10.4 Environmental Consequences

This section identifies the anticipated long-term and short-term (construction) direct and indirect impacts of the Project with the proposed Beltline Station joint development project, compared to the Project without the Proposed Beltline Station joint development project. Direct impacts are defined as those reasonably

¹ District parking is parking spaces that would be available for the commercial, office, and residential uses of the site.

² As per City of St. Louis Park Resolution No. 15-125 – A Resolution Approving an Amendment to the 2030 Comprehensive Plan for the City of St. Louis Park under Minnesota Statutes 462.351 to 462.364. See Appendix D for instruction on how to access the resolution.

foreseeable impacts that occur at the same time and place as the proposed action, while indirect impacts are defined as those that occur later in time or further removed in distance from the proposed action, but that are still reasonably foreseeable (40 Code of Federal Regulations 1508.8). Long-term impacts are those that will continue to occur after construction is complete, while short-term impacts are those that will be temporary and that will be associated with the Project's construction activities (see Section 2.1.1.2 for a description of construction activities).

Table 10.4-1 below summarizes the anticipated impacts of the Project with the proposed Beltline Station joint development project, compared to the anticipated impacts of the Project without the proposed Beltline Station joint development project. That is, the table identifies additional impacts that would occur under the Project if the Project were to include the Beltline Station joint development project. The table is organized by the environmental categories that are addressed in Chapters 3, 4, 5, and 6 of this Final EIS, where impacts resulting from the Project without the Beltline Station joint development project are described. Those resources where additional impacts would occur as a result of adding the Beltline Station joint development project to the Project are discussed in further detail below.

10.4.1 Source: Council, 2015. Long-term Direct Impacts

10.4.1.1 Land Use

The direct impact to land use would be the construction of a parking structure and a joint development with a private developer that would result in approximately 324,000 square feet of commercial uses and 260 residential units on several parcels. However, the parking structure and planned future development is compatible with planned land uses for this site: although the existing zoning is General Industrial and the City of St. Louis Park Comprehensive Plan currently guides this site for Business Park. The City anticipates redevelopment of the site to happen under the Mixed Use zoning district.

Based on this assessment, no adverse impacts with respect to land use are anticipated as result of the proposed Beltline Station joint development project.

10.4.1.2 Economic Activity

The Beltline Station joint development project has the potential to create a small number of direct short term jobs and additional earnings associated with the construction of the parking structure and associated development. The conceptual development plan includes office space which would generate long-term jobs and earnings. The additional trips to the area as a result of the increased parking and increased density and transit access may provide economic stimulus to local retail shops as potential customers frequent the area.

No long-term adverse impacts to property tax collections for the City of St. Louis are expected as a result of property acquisitions. The two additional properties acquired for the joint development project are currently tax-exempt parcels.

The Beltline Station joint development project would result in the addition of approximately 12,200 square feet of retail use, 312,000 square feet of office use, and 260 residential units (which would be within a multi-unit residential building that would either be owner occupied or rented). These additional uses at the proposed joint development site would tend to increase economic activity and the redevelopment will increase the property value and consequently the tax collections.

Based on this assessment, no adverse impacts with respect to economic activity are anticipated as result of the joint development project

TABLE 10.4-1

Summary of Impacts from Beltline Station Joint Development Project

Environmental Category ^a	Summary of Impacts ^b
Land Use	3.15 acres of land to be acquired
Economic Activity	Long-term increase in commercial, office, and multi-family residential uses, which would increase economic activity Short-term increase in jobs related to the additional construction activities associated with implementation of the joint development project
Neighborhood and Community	Change in neighborhood's visual character Addition of mixed use development
Acquisitions and Displacements	Acquisition of 2 additional parcels (3.15 acres in size)
Cultural Resources	None
Parklands, Recreation Areas, and Open Spaces	None
Visual Quality and Aesthetics	Addition of multi-story buildings that would affect the visual environment at the Beltline Station, but the degree of visual change would not be high
Geology and Groundwater Resources	None
Surface Water Resources	0.28-acres of wetland permanently filled Additional 0.5 acres of impervious surface
Ecosystems	None
Air Quality and Greenhouse Gases	None
Noise	None
Vibration	None
Hazardous and Contaminated Materials	None
Electromagnetic Interference and Utilities	No adverse electromagnetic interference impacts anticipated Additional changes to utilities anticipated within and connecting to the joint development site
Energy	None
Transit	Approximately 540 additional average weekday transit boardings in 2040 due to additional park-and-ride spaces Additional increase in transit boardings due to the commercial, office, and residential use
Roadways and Traffic	An increase in vehicle trips to/from the site due to increased park-and-ride transit trips and to commercial, office, and retail use, but no change in the intersection level-of-service and queuing ^c
Parking	Additional 272 park-and-ride spaces at the Beltline Station would meet anticipated park-and-ride demand for the Beltline Station in 2040, reducing the risk of spillover parking in the vicinity of the propose station Additional 1,505 parking spaces provided to serve the proposed commercial, office, and residential uses
Freight	None
Pedestrian and Bicycle	None
Safety and Security	None
Environmental Justice Compliance	No change in the Project-wide environmental justice finding that the Project will not result in disproportionately high and adverse impacts to Environmental Justice populations.
Section 4(f)/Section 6(f)	No permanent use or temporary occupancy of protected Section 4(f)/6(f) properties.

^a The environmental categories are those assessed in Chapter 3, 4, 5, and 6 of this Final EIS.

^b Impacts are of the Project with the proposed Beltline Station joint development project, compared to the Project without the proposed Beltline Station joint development project.

^c Should the final mix of retail, office, and residential uses that would occupy the site warrant it, the Beltline Station joint development project would include the addition of a west-bound left-turn lane on Park Glen Road at Beltline Boulevard.

10.4.1.3 Neighborhood and Community

Based on a review of potential changes to access to community facilities access, changes to community character, and changes to community cohesion, the proposed Beltline Station joint development project would not result in adverse impacts to neighborhoods and communities, when compared to the Southwest LRT Project. The following is a summary of the evaluation criteria used to analyze potential impacts to neighborhoods and community:

- **Access to community facilities.** There are no community facilities within or adjacent to the limits of disturbance for the joint development project site. Therefore, the joint development project would not change access to community facilities.
- **Community character.** When compared to the Southwest LRT Project, the joint development project would not result in additional noise or vibration impacts. If warranted, the Beltline Station joint development project would include the addition of a west-bound left-turn lane on Park Glen Road at Beltline Boulevard and it would not result in a deterioration of levels of service in surrounding roadway intersections. As noted in Section 10.4.1.1.E, the additional multi-story buildings that would be associated with the proposed joint development project would change the visual setting in the vicinity of the proposed Beltline Station, but that change would not be substantial.
- **Community cohesion.** The joint development project site will not add physical barriers to neighborhood connectivity or result in adverse impacts to parking. The proposed joint development project will provide a mix of uses at the site, which would be consistent with the mix of uses within the vicinity of the proposed Beltline Station. In addition, the redevelopment of the site would allow for the addition of local roadways and pedestrian and bicycle infrastructure improvements that will help to increase connectivity in the neighborhood and increase access to the station.

Based on this assessment, no adverse impacts to neighborhood and community are anticipated as result of the joint development project.

10.4.1.4 Acquisitions and Displacements

Two additional parcels (3.15 acres in size) would need to be acquired to accommodate the joint development project. The parcels to be acquired are currently owned by the City of St. Louis Economic Development Authority. Because there are no active businesses on the two parcels, there would be no business displacements associated with the joint development project.

Based on this assessment, no adverse impacts with respect to acquisitions and displacements are anticipated as result of the joint development project.

10.4.1.5 Visual Quality and Aesthetics

The addition of the Beltline Station joint development project into the Project would result in the removal of the proposed surface park-and-ride lot at the Beltline Station from the design of the Project, which would be replaced with the design of three multi-story buildings (see Exhibit 10.2-1). A visual simulation of the site without and with the proposed Beltline joint development project is provided in Exhibits 10.4-1 and 10.4-2. With the addition of the multi-story buildings, the Beltline Station joint development project would add multi-story structures to the landscape around the Beltline Station and existing vegetation on the additional parcels to be acquired would be removed. However, the proposed joint development project site is within a built urban environment, with existing multi-story buildings in the immediate vicinity (e.g., north across Highway 25) and existing and planned trail bridges to the northwest and south of the site, respectively. As a result, the joint development project would not result in a high degree of change to the visual environment at this location, and the changes that would occur would be compatible with the existing urban visual setting.

10.4.1.6 Surface Water Resources

Following is a description of potential impacts to wetlands and stormwater that would result from including the Beltline Station joint development project into the Project. No additional impacts to floodplains would occur as a result of including the Beltline Station joint development project into the Project.

EXHIBIT 10.4-1
Visual Simulation of the Beltline Station Joint Development Project Site – Without the Joint Development Project (south of Highway 25, looking southeast)



	<p>Southwest LRT FINAL EIS Visual Simulation of the Beltline Station Joint Development Project Site – Without the Joint Development Project South of Highway 25, Looking Southeast</p>	
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EXHIBIT 10.4-2
Visual Simulation of the Beltline Station Joint Development Project Site – With the Joint Development Project (south of Highway 25, looking southeast)



	<p>Southwest LRT FINAL EIS Visual Simulation of the Beltline Station Joint Development Project Site – With the Joint Development Project South of Highway 25, Looking Southeast</p>	
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Wetlands

Approximately 12,146 square feet (0.28 acre) of wetland (MC-SLP-08) would be permanently filled as a result of the proposed joint development project—this would be a direct adverse impact to a wetland area (see Exhibit 10.4-3). The placement of the proposed park-and-ride in this location was determined to be the most suitable of various alternatives considered because: (1) it is the only property in the area that has adequate space to accommodate the forecasted parking requirements of the anticipated commuters that would not require the displacement of any additional existing business;³ and (2) it provides the opportunity to leverage the City-owned property for the joint development project. The size of the proposed on-site parking (a combination of structured and surface spaces) is the minimum necessary to accommodate the anticipated park-and-ride demand and parking to support the proposed commercial, office, and residential uses. It would not be feasible to sustain any portion of MC-SLP-08 given the size of the parking area needed, and the relatively small size of the wetland.

MC-SLP-08 is an isolated Type 7, hardwood swamp that is currently used for stormwater treatment. Wetland vegetation is dominated by common buckthorn (*Rhamnus cathartica*), reed canary grass (*Phalaris arundinacea*), and green ash (*Fraxinus pennsylvanica*). MC-SLP-08 is an isolated wetland exempt from regulation by Section 404 of the federal Clean Water Act. The wetland is regulated by the Minnehaha Creek Watershed District under the Minnesota Wetland Conservation Act and Minnehaha Creek Watershed District Wetland Protection Rule. The entire wetland will be filled by the proposed Southwest LRT Project with the proposed Beltline Station joint development project (none of the wetland would be filled or spanned as a result of the Project without the proposed Beltline Station joint development project).

Stormwater

The joint development project would increase impervious surfaces by approximately 0.5 acres, due to the development of structures on the additional parcel to be acquired. All stormwater resulting from the additional increase in impervious surfaces will be treated in accordance with applicable state and local requirements using best management practices described in Section 3.9 of this Final EIS.

10.4.1.7 Transit

As the Beltline Station is the last inbound station on the line with a park-and-ride lot, and demand has been shown to be 540 spaces, the additional 272 spaces associated with the joint development project would produce approximately 540 additional daily boardings/ridership compared to the Southwest LRT Project without the joint development project. There also would be an additional increase in transit boardings due to the commercial, office, and residential uses that would result from the proposed joint development project (e.g., based on an approximately 10 percent mode split associated with trips associated with the proposed commercial, office, and residential uses, the joint development project would result in approximately 375 additional average weekday transit trips). Based on this assessment, no adverse impacts with respect to transit are anticipated as result of the joint development project.

10.4.1.8 Parking

An additional 272 parking spaces inside a parking structure would be added as part of the joint development project for a total of 540 parking spaces; however, no adverse impacts to overall area parking conditions are anticipated as a result of the additional parking structure parking spaces. The additional 272 park-and-ride spaces at the Beltline Station under the proposed Beltline Station joint development project would meet anticipated park-and-ride demand for the Beltline Station, thereby reducing the risk of spillover parking in the vicinity of the proposed station.

In addition to the 540 park-and-ride spaces at the site, the Beltline Station joint development project would result in 1,505 new parking spaces provided to serve the proposed commercial, office, and residential uses.

³ One business would be displaced from the joint development site due to the surface park-and-ride lot that would occur under the Project without the Beltline Station joint development project.



EXHIBIT 10.4-3
Wetland Impact at Beltline Station Joint Development Project

LEGEND

Project Limits of Disturbance

Field Delineated Wetland



	<p>Southwest LRT FINAL EIS</p> <p>Anticipated Project Wetland Impacts at the Proposed Beltline Station – without and with Beltline Station Joint Development</p>	
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10.4.1.9 Roadways and Traffic

While there would be an increase in vehicle trips to/from the site under the proposed Beltline Station joint development project (due to increased park-and-ride transit trips and due to the commercial, office, and retail use within the site), there would be no change in the intersection level-of-service and queuing. As previously noted, should the final mix of retail, office, and residential uses that would occupy the site warrant it, the Beltline Station joint development project would also include the addition of a west-bound left-turn lane on Park Glen Road at Beltline Boulevard.

10.4.2 Long-term Indirect Impacts

10.4.2.1 Land Use

Similar to the City of St. Louis Park's comprehensive plan Mixed Use land use designation and anticipated re-zoning for the parcels anticipated to be used for the proposed Beltline Station joint development, additional properties within other station areas could eventually have revised comprehensive plan designations and/or be rezoned to facilitate additional joint development projects.

10.4.3 Short-term Impacts

10.4.3.1 Economic Activity

Construction of the Beltline Station joint development project will represent additional capital investment in the regional economy in the form of additional parking structures and parking lots and those additional construction activities will temporarily increase employment, earnings, and economic output during the construction period.

10.4.3.2 Roadways and Traffic

Construction of the Beltline Station joint development site would affect adjacent roadways and traffic on those roadways associated with an increase in construction activities at the site, compared to construction activities under the Project without the Beltline Station joint development project (e.g., increased truck traffic to and from the site, temporary lane closures).

10.5 Mitigation Measures

This section describes the measures the Council will implement to mitigate the Beltline Station joint development project's long-term and short-term impacts. These mitigation measures would only be implemented if the Beltline Station is ultimately included within the Project and constructed, which may occur concurrently with or subsequent to implementation of the Project.

10.5.1 Long-term Mitigation Measures

Impact. Permanent fill in wetland associated with joint development project.

Mitigation. Mitigation for the direct impacts to wetlands associated with joint development project would be provided to meet state and local wetland compensatory mitigation requirements through joint development project-specific compensatory wetland mitigation, purchase of approved mitigation banking credits, or a combination of both. These wetland mitigation measures would only be implemented if the Beltline Station is ultimately included within the Project and constructed; and the mitigation measures would be implemented concurrently with the Beltline Station joint development project (which may occur concurrently with or subsequent to implementation of the Project).

10.5.2 Short-term Mitigation Measures

Impact. Short-term impacts to residents and businesses associated with construction of joint development project.

Mitigation. Specific mitigation measures for short-term impacts to businesses are identified in the Construction Communication Plan and a construction staging plan, which will be implemented by the Council prior to and during construction. As described in the Communications and Public Involvement Plan, the purpose of the Construction Communication Plan is to: prepare businesses and

commuters in the project vicinity for construction; listen to their concerns; and develop plans to minimize harmful or disruptive effects. Specific mitigation measures included in the Construction Communication Plan are location specific and may include:

- Issue and post to the Southwest LRT Project website regular construction updates
- Provide advance written notice of roadway closures, driveway closures, and utility shutoffs
- Conduct public construction meetings
- Establish a 24-hour construction hotline
- Prepare a brochure with applicable construction information
- Post special open for business and way-finding signage
- Address property access issues
- Assign staff to serve as liaisons between the public and contractors during construction

In addition, the Council will develop and implement a construction staging plan, which will be reviewed with the appropriate jurisdictions and railroads, and the contractor will be required to secure the necessary permits and follow a construction staging plan, unless otherwise approved. Components of a construction staging plan include traffic management plans and a detailed construction timeline.

Traffic management plans will be reviewed by the appropriate jurisdictions before starting construction activities. In some cases, intersections may need to be modified to minimize vehicle delay. Measures may include the addition of turn lanes, the construction of temporary traffic signals, the revision of existing signal timing plans, or the addition of warning signs.

A detailed construction timeline will be developed before the initiation of construction activities that would inform roadway users and adjacent property owners about when the activities would begin, the type of work being performed, an estimate of when the work will be completed, and recommendations on how individuals and entities can minimize disruption to their activities.

These mitigation measures for short-term impacts would only be implemented if the Beltline Station joint development project is ultimately included within the Project and constructed; and the mitigation measures would be implemented concurrently with the Beltline Station joint development project, which may occur concurrently with or subsequent to construction of the Project.

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